

Permit Fact Sheet

General Information

Permit Number:	WI-0020338-09-0												
Permittee Name:	CITY OF STOUGHTON												
Address: City/State/Zip:	700 Mandt Parkway PO Box 383 Stoughton WI 53589												
Discharge Location:	NEQ, SEQ, Section 8, T5N, R11E , Township of Dunkirk at 700 Mandt Parkway in the City of Stoughton Lat: 42° 54’ 37” Long: 89° 12’ 48”												
Receiving Water:	Yahara River (Yahara River & Lake Kegonsa Watershed, LR06 – Lower Rock River Basin) in Dane County												
StreamFlow (Q _{7,10}) (cfs):	Ann	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	21	97	79	76	46	54	27	24	33	32	36	100	120
Stream Classification:	Warmwater Sport Fishery Community (WWSF)												
Design Flow(s)	Daily Maximum			4 MGD									
	Weekly Maximum			3.14 MGD									
	Annual Average			1.65 MGD									
Significant Industrial Loading?	B&G Foods, Inc., Color-Con and Uniroyal Global Engineered Products, LLC												
Operator at Proper Grade?	Advanced facility with required subclasses: A1–Suspended Growth Processes; B–Solids Separation; C–Biological Solids/Sludges; P–Total Phosphorus; D–Disinfection; and L–Laboratory. Multiple operators fully certified.												

Facility Description

The City of Stoughton serves a population of approximately 13,000 people as well as several significant industries (see list above). This facility is a conventional activated sludge plant consisting of fine screening, grit removal, primary settling, and biological treatment including Bio-P removal, final clarification and UV disinfection. Waste sludge is thickened in a dissolved air flotation thickener before being combined with primary sludge and anaerobically digested. The digested sludge is dewatered on a gravity belt thickener before storage. Land spreading on Department approved farmland is the final disposal option for the stored bio-solids. Back up chemical is available to treat side streams (or the forward flow if necessary) for Phosphorus. The collection system for the City of Stoughton is a separate sewer system with no constructed overflow points. The City is also covered under a “no exposure certification” for storm water. The Department has found the City to be in substantial compliance with its current permit.

In order to comply with the total phosphorus effluent limitations set forth in the Rock River TMDL, Stoughton will implement a Department-approved Adaptive Management Plan (Plan No. WQT-2017-0003) to pursue final phosphorus limit compliance. This effort will involve close partnerships with the Madison Metropolitan Sewerage District, Village of Oregon, City of Stoughton, WDNR Nevin Fish Hatchery, various Municipal Separate Storm Sewer Systems (MS4s) within the Yahara River watershed, County Land & Water Conservation Departments, NGOs, Lake Management Groups, and the agricultural community in an effort to reduce in-stream phosphorus concentration in the Yahara River watershed. Stoughton's current permit expiring on June 30, 2019 was revoked and will be reissued to include the provisions outlined in the adaptive management plan.

The attached water quality based effluent limitation (WQBEL) recommendations by the Water Quality Bureau for this permit reissuance dated May 22, 2017 contains additional information regarding the discharge to the Yahara River. The WQBEL memo also include an outfall location map depicting the location of the Stoughton Wastewater Treatment Plant outfall.

Proposed Permit Reissuance

The Department anticipates an effective date of April 1, 2019 for the proposed permit. Therefore, to allow a full permit term of five years, the proposed permit's expiration date is March 31, 2024. If the permit reissuance process takes more or less time than anticipated, the permit's dates of effectiveness and expiration may be changed accordingly.

Sample Point Designation

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)
701	1.066 MGD (Average 7/1/14 to 6/30/17)	Influent: 24-hour flow proportional composite sampler located prior to the mechanical bar screen.
001	0.937 MGD (Average 7/1/14 to 6/30/17)	Effluent: 24-hour flow proportional composite sampler intake located in the disinfection channel prior to UV disinfection. Grab samples after disinfection prior to discharge to Yahara River.
002	140 dry U.S. Tons (Average 2014 – 2016)	Class B, liquid, anaerobically digested, dissolved air flotation and gravity belt thickened, liquid biosolids. Representative samples are taken from the sludge storage tank.
101	N/A	In-plant Mercury: Collet a mercury field blank every day that mercury samples are collected at influent and effluent using the clean hands/dirty hands sample collection procedure from EPA method 1669.

1 Influent - Proposed Monitoring

Sample Point Number: 701- INFLUENT

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Continuous	Continuous	
CBOD ₅		Mg/L	3/Week	24-Hr Flow Prop Comp	
BOD ₅ , Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Mercury, Total		ng/L	Quarterly	24-Hr Flow	See subsection 1.2.1.1 in the permit for mercury

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Recoverable				Prop Comp	monitoring requirements.

Changes from Previous Permit and Explanation of Monitoring Requirements

No Changes. Standard influent monitoring parameters and frequencies for a Major municipal treatment facility of this size. Quarterly influent mercury monitoring is required per NR 106.145(3)(a)2, Wis. Adm. Code, for municipal major WWTF's with actual flows greater than 1.0 MGD.

2 Inplant - Proposed Monitoring and Limitations

Sample Point Number: 101- FIELD BLANK for Hg MONITORING

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Mercury, Total Recoverable		ng/L	Quarterly	Blank	See subsection 2.2.1.1 in the permit for mercury monitoring requirements.

Changes from Previous Permit & Explanation Monitoring Requirements

No changes from previous permit. A mercury field blank shall be collected using the Clean Hands/Dirty Hands sample collection procedure excerpted from EPA Method 1669 for every day that mercury influent and effluent samples are collected.

3 Surface Water - Proposed Monitoring and Limitations

Sample Point Number: 001- EFFLUENT to YAHARA RIVER

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Continuous	Continuous	
CBOD5	Weekly Avg	33 mg/L	3/Week	24-Hr Flow Prop Comp	Limit in effect May through October annually.
CBOD5	Weekly Avg	40 mg/L	3/Week	24-Hr Flow Prop Comp	Limit in effect November through April annually.
CBOD5	Monthly Avg	25 mg/L	3/Week	24-Hr Flow Prop Comp	
CBOD5	Weekly Avg	454 lbs/day	3/Week	Calculated	Limit in effect May through October annually.
Suspended Solids, Total	Weekly Avg	40 mg/L	3/Week	24-Hr Flow Prop Comp	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Suspended Solids, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	567 lbs/day	3/Week	Calculated	Limit in effect January, March, May, July, August, October and December annually.
Suspended Solids, Total	Weekly Avg	625 lbs/day	3/Week	Calculated	Limit in effect February annually.
Suspended Solids, Total	Weekly Avg	590 lbs/day	3/Week	Calculated	Limit in effect April, June, September and November annually.
Suspended Solids, Total	Monthly Avg	402 lbs/day	3/Week	Calculated	Limit in effect January, March, May, July, August, October and December annually.
Suspended Solids, Total	Monthly Avg	444 lbs/day	3/Week	Calculated	Limit in effect February annually.
Suspended Solids, Total	Monthly Avg	419 lbs/day	3/Week	Calculated	Limit in effect April, June, September and November annually.
pH Field	Daily Min	6.0 su	3/Week	Grab	
pH Field	Daily Max	9.0 su	3/Week	Grab	
Dissolved Oxygen	Daily Min	6.0 mg/L	3/Week	Grab	Limit in effect May through October annually.
Fecal Coliform	Geometric Mean - Monthly	400 #/100 ml	2/Week	Grab	Limit in effect May through October annually.
Fecal Coliform	Geometric Mean - Wkly	780 #/100 ml	2/Week	Grab	Limit in effect May through October annually.
Nitrogen, Ammonia Variable Limit		mg/L	3/Week	24-Hr Flow Prop Comp	Using the daily effluent pH result, look up the daily maximum variable ammonia limit from the pH dependent table at subsection 3.2.1.2 in the permit. Report the variable limit in the Nitrogen, Ammonia Variable Limit column of the eDMR.

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Nitrogen, Ammonia (NH3-N) Total	Daily Max - Variable	mg/L	3/Week	24-Hr Flow Prop Comp	Report the daily maximum Ammonia result in the Nitrogen, Ammonia (NH3-N) Total column of the eDMR. Compare to daily maximum variable ammonia limit to determine compliance.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	18 mg/L	3/Week	24-Hr Flow Prop Comp	Limit in effect October through March annually.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	11 mg/L	3/Week	24-Hr Flow Prop Comp	Limit in effect April and May annually.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	28 mg/L	3/Week	24-Hr Flow Prop Comp	Limit in effect June through September annually.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	28 mg/L	3/Week	24-Hr Flow Prop Comp	Limit in effect June through March annually.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	20 mg/L	3/Week	24-Hr Flow Prop Comp	Limit in effect April and May annually.
Phosphorus, Total	Monthly Avg	1.0 mg/L	3/Week	24-Hr Flow Prop Comp	
Phosphorus, Total	6-Month Avg	0.6 mg/L	3/Week	24-Hr Flow Prop Comp	This is an Adaptive Management (AM) interim limit that goes into effect beginning November 1, 2020. See subsection 5.1 for the AM interim limit compliance schedule and subsection 3.2.1.3 in the permit for averaging periods and compliance determination.
Phosphorus, Total		lbs/day	3/Week	Calculated	Calculate the daily mass discharge of phosphorus in lbs/day on the same days phosphorus sampling occurs.
Mercury, Total Recoverable	Daily Max	3.2 ng/L	Quarterly	Grab	This is an Alternative Mercury Effluent Limit. See subsections 3.2.1.8 in the permit for Mercury Variance information, 3.2.1.9 for Mercury

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
					Monitoring Requirements and 5.2 for the mercury variance compliance schedule.
Acute WET	Daily Max	1.0 TU _a	See Listed Qtr(s)	24-Hr Flow Prop Comp	See subsection 3.2.1.11 in the permit for whole effluent toxicity (WET) testing monitoring dates and WET requirements.
Chronic WET	Monthly Avg	3.0 TU _c	See Listed Qtr(s)	24-Hr Flow Prop Comp	See subsection 3.2.1.11 in the permit for whole effluent toxicity (WET) testing monitoring dates and WET requirements.
Chloride		mg/L	4/Month	24-Hr Flow Prop Comp	Monitoring Only - January 1, 2022 through December 31, 2022. Samples shall be collected on four consecutive days one week per month. See subsection 3.2.1.10 in the permit for chloride monitoring requirements.
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	Monitoring Only
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	Monitoring Only
Nitrogen, Total		mg/L	Quarterly	Calculated	Monitoring Only

Changes from Previous Permit

Stoughton's reissued permit will now contain weekly average ammonia nitrogen limits of 20 mg/L for April through May and 28 mg/L for June through March. Monthly average limits of 11 mg/L for April through May, 28 mg/L for June through September and 18 mg/L for October through March will also apply. The current permit contains only daily maximum ammonia nitrogen limits that vary based on effluent pH. The reissued permit will have a new fecal coliform limit of 780 #/100 ml as a weekly geometric mean, effective May 1 through September 30 annually that is in addition to the current fecal coliform limit of 400 #/100 ml as a monthly geometric mean. Total phosphorus (TP) mass limits calculated for the Rock River total maximum daily load (TMDL) are recommended and were to go into effect per a phosphorus compliance schedule contained in the current permit; however, Stoughton has requested and the Department has approved a plan to implement a watershed adaptive management approach under s. NR 217.18, Wis. Adm. Code, as a means for Stoughton to achieve compliance with the phosphorus water quality standards in s. NR 102.06, Wis. Adm. Code. This adaptive management plan is a partnership between the City of Stoughton, City of Madison, Village of Oregon and the Wisconsin DNR Nevin Fish Hatchery plus various municipal separate storm sewer system (MS4s) within the Yahara River action area as defined in the adaptive management plan. An adaptive management TP interim limit of 0.6

mg/L will apply beginning November 1, 2020 per a compliance schedule, while a 1.0 mg/L monthly average TP limit applies on the permit effective date. Stoughton's current permit has an alternative phosphorus limit of 1.3 mg/L as a monthly average. Stoughton has applied for a continuation of a variance from the water quality standard for mercury based on the wildlife criterion of 1.3 ng/L as a monthly average. If approved by EPA a daily maximum Alternative Mercury Effluent Limit (variance limit) of 3.2 ng/L will apply on the permit effective date, Stoughton will be required to implement an approved mercury pollutant minimization program (PMP) plan and submit annual mercury progress reports per a Mercury PMP compliance schedule. The reissued permit will require quarterly monitoring of total nitrogen parameters (total kjeldahl nitrogen, nitrite + nitrate nitrogen and total nitrogen).

Explanation of Limits and Monitoring Requirements

Water Quality Based Limits and WET Requirements and Disinfection

CBOD₅, Total Suspended Solids (TSS) Dissolved Oxygen (DO) and pH

No changes are recommended in the permit limitations for CBOD₅, Total Suspended Solids (concentration and TMDL mass), Dissolved Oxygen (DO) and pH. Because the reference effluent flow rates and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.

Disinfection – Seasonal disinfection is required May through October and is accomplished using ultra-violet (UV) light.

Fecal Coliform – The current permit has a fecal coliforms limit of 400 #/100 ml as a monthly geometric mean that is being retained in the reissued permit. Due to recent revisions to ch. NR 106 (effective September 1, 2016), whenever a monthly average limitation is determined necessary to protect water quality, a weekly average limit shall be calculated using procedures specified in s. NR 106.07(3)(e)4. Based on these calculations a fecal coliforms limit of 780 #/100 ml as a weekly geometric mean shall be included in the proposed permit.

Ammonia Nitrogen – Current acute and chronic ammonia toxicity criteria for the protection of aquatic life are included in Tables 2C and 4B of ch. NR 105, Wis. Adm. Code (effective March 1, 2004). Subchapter IV of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for ammonia (effective March 1, 2004). Acute (daily maximum) ammonia limits are a function of receiving stream classification and effluent pH at the time of discharge. The maximum reasonably expected pH of Stoughton's effluent is 7.7 s.u. (standard pH units), which yields a computed daily maximum limit of 27.91 mg/L (28 mg/L, rounded). However, Stoughton's reissued permit will once again contain variable ammonia limits that vary with effluent pH. Weekly and monthly average ammonia limits were calculated in the May 22, 2017 WQBEL memo for Spring (April through May), Summer (June through September) and Winter (October through March). The calculated limits were compared to the 4-day (weekly) and 30-day (monthly) Upper 99th Percentiles (P99s) of ammonia data collected during the current permit term. The only period of months that showed a reasonable potential to exceed the calculated limits were the weekly and monthly average limits for April through May (spring). The 4-day P99 of 20.64 mg/L exceeded the calculated limit of 19.78 mg/L and therefore a weekly average limit of 20 mg/L (rounded) shall be included in the reissued permit for spring. The 30-day P99 was 14.53 mg/L, which exceeded the calculated limitation of 11.22 mg/L so a monthly average limit of 11 mg/L (rounded) will also apply.

Expression of Limits

Revisions to ch. NR 106, require weekly average and monthly average limits 1) whenever a daily maximum limitation is determined necessary to protect water quality or 2) the calculated weekly average and monthly average limit (regardless of reasonable potential), whichever is more restrictive. Since a daily maximum limit of 28 mg/L was determined to be necessary for all of the periods of months analyzed (spring, summer and winter) weekly average and monthly average limits for summer (June through September) were both set equal to the daily maximum limit of 28 mg/L. For winter (October through March) since a daily maximum limit of 28 mg/L was determined to be necessary the weekly average ammonia limit for winter was set equal to 28 mg/L. The calculated monthly average ammonia limit for winter was 18 mg/L, which is more stringent than the daily maximum limit so the monthly average limit was set equal to 18 mg/L.

Phosphorus – Phosphorus requirements are based on the Phosphorus Rules that became effective December 1, 2010 as detailed in chs. NR 102 Water Quality Standards and NR 217 Effluent Standards and Limitations for Phosphorus. See

<http://dnr.wi.gov/topic/surfacewater/phosphorus.html> for details regarding the administrative rules for phosphorus discharges.

As noted below, total phosphorus mass limits based on the Rock River Total Maximum Daily Load (TMDL) Waste Load Allocation (WLA) have been determined necessary for the Stoughton WWTF. However, Stoughton has requested and the Department has approved a plan to implement a watershed adaptive management approach under s. NR 217.18, as a means for Stoughton to achieve compliance with the phosphorus water quality standards in s. NR 102.06, and the Rock River TMDL. The phosphorus limitations and conditions in the proposed permit reflect the approved adaptive management (AM) plan No. WQT-2017-0003. AM Plan No. WQT-2017-0003 is a partnership between the City of Stoughton, Village of Oregon, WDNR Nevin Fish Hatchery, Madison Metropolitan Sewage District and various Municipal Separate Storm Sewer Systems (MS4s) located in the Yahara River watershed. The AM Plan identifies the Yahara River action area, which encompasses the entire Yahara River watershed, where watershed projects shall be implemented to reduce phosphorus and total suspended solids loadings from point and non-point sources of these pollutants.

At the end of the first permit, the total minimum phosphorus reduction required is 5,329 lbs/yr. Stoughton's portion of the total reduction is 10 lbs/yr.

The Adaptive Management Plan was written such that Madison Met is solely responsible for coordinating in-stream monitoring and submittal of all required data and annual reports for all entities that are participating in the Yahara River Basin AM Plan; this includes the City of Stoughton, Village of Oregon, WDNR Nevin Fish Hatchery, and various MS4 partners. Each entity has signed an Intergovernmental Agreement (IGA) indicating more details on roles and responsibilities. This IGA as well as the Memorandum of Understanding (MOU) that the Department signed with Madison Met can be found in the appendix of the Adaptive Management Plan.

Total phosphorus mass limits were calculated to comply with the Rock River TMDL, and were derived consistent with the assumptions and requirements of the EPA-approved waste load allocation for the Rock River. Limits were determined using the code changes and the provision of the TMDL. For informational purposes, the final TMDL mass limits are presented in the following table:

Total Phosphorus Effluent Limitations

Month	Monthly Ave Total P Effluent Limit (lbs/day)
Jan	4.3
Feb	5.6
March	4.9
April	5.3
May	5.2
June	5.3
July	5.1
Aug	4.6
Sept	4.9
Oct	4.1
Nov	4.0
Dec	3.9

Mercury – Actual flow is greater than 1.0 MGD so the quarterly mercury influent, effluent and field blank monitoring requirements for Major WWTFs in Subchapter III, NR 106.145, apply. Mercury effluent and field blank data generated during the current permit term were evaluated for sampling and analysis requirements in accordance with ss. NR 106.145 (9) and (10). The 30-day P99 of effluent results calculated using the procedures in s. NR 106.05(5), was 1.74 ng/L, which

is greater than the water quality standard for the protection of wildlife of 1.3 ng/L (the most stringent criterion for this substance), so a limit is necessary (WQBEL). However, s. NR 106.145(4), provides for a variance from water quality standards for this substance in light of its presence in the environment and Stoughton has requested this variance. An Alternative Mercury Effluent Limit (AMEL) is established at the calculated 1-day P99 of 3.2 ng/L (rounded). The permit requires Stoughton to continue quarterly influent, field blank and effluent monitoring, maintain mercury discharge concentrations at or below 3.2 ng/L as a daily maximum and implement a Pollutant Minimization Program designed to minimize mercury influent to the plant with the ultimate goal of meeting the unvaried mercury limit.

WET – Whole effluent toxicity (WET) testing requirements and limits (if applicable) are determined in accordance with ss. NR 106.08 and NR 106.09, as revised August 2016. (See the current version of the Whole Effluent Toxicity Program Guidance Document and checklist and WET information, guidance and test methods at <http://dnr.wi.gov/topic/wastewater/wet.html>). Based on a reasonable potential analysis in the May 22, 2017 WQBEL memo an acute WET limit of 1.0 TUa (daily maximum) and a chronic WET limit of 3.0 TUc (monthly average) are required in Stoughton's reissued permit. A minimum of annual acute and chronic monitoring is required because acute and chronic WET limits are required. See subsection 3.2.1.10 in the permit for WET testing dates and WET requirements.

Toxics/Metals – Subsection NR 200.06(1)(a), Table 1, establishes minimum application monitoring requirements for discharges to surface waters. For a major municipal discharger that monitoring includes a Priority Pollutant scan (PPS) for toxic parameters, including metals. These data were reviewed in the WQBEL memo dated May 22, 2017. Chromium 6+ and Bis(2-ethylhexyl)phthalate were detected at levels greater than 1/5 of the calculated daily maximum limits and permit limitations were recommended for both substances. However, Stoughton submitted two additional samples for both parameters and the average effluent concentration for Chromium 6+ dropped to below 1/5 of the daily maximum limit and therefore no limit is necessary. For Bis(2-ethylhexyl)phthalate, the two sample results were both non-detects leading to the conclusion that the original result that triggered the need for a limit is unrepresentative of the discharge and limits are no longer recommended for the parameter. Many of the other substances in the PPS were below levels of detection. No additional limitations are proposed in the reissued permit.

Chloride – Acute and chronic chloride toxicity criteria for the protection of aquatic life are included in Tables 1 and 5 of ch. NR 105. Subchapter VII of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for chloride. The calculated 1-day Upper 99th Percentile (566.58 mg/L) of Stoughton's reported chloride effluent concentrations is less than the acute (daily maximum) chloride limit (1,514 mg/L) and the 4-day Upper 99th Percentile (483.99 mg/L) is less than the chronic (weekly average) chloride limit (1,207.28 mg/L), so chloride limits are not needed in the permit (WQBEL). Four samples per month (on consecutive days) chloride monitoring is required in calendar year 2022 to collect data for the next permit reissuance process.

Thermal – Requirements for Temperature are included in NR 102 Subchapter II Water Quality Standards for Temperature and NR 106 Subchapter V Effluent Limitations for Temperature. Thermal discharges must meet the Public Health criterion of 120° F and the Fish & Aquatic Life criteria which are established to protect aquatic communities from lethal and sub-lethal thermal effects. The lowest daily maximum effluent limitation for temperature is 100° F compared to the highest daily maximum effluent temperature of 74° F and the lowest weekly average effluent temperature limitation is 88° F compared to the highest weekly average effluent temperature of 74° F, so temperature limitations are unnecessary. One year of effluent temperature monitoring is recommended in the WQBEL memo; however, since the limits are so much higher than the measured temperatures no monitoring will be required.

Total Nitrogen Monitoring (NO₂+NO₃, TKN and Total N) – Based on the "Guidance for Total Nitrogen Monitoring in WPDES Permits" dated October 2012, quarterly effluent monitoring for Total Nitrogen is required for municipal majors discharging to the Mississippi River Basin.

4 Land Application - Proposed Monitoring and Limitations

Municipal Sludge Description						
Sample Point	Sludge Class (A or B)	Sludge Type (Liquid or Cake)	Pathogen Reduction Method	Vector Attraction Method	Reuse Option	Amount Reused/Disposed (Dry Tons/Year)
002	B	Liquid	Anaerobic Digestion	Injection	Land Application	140 dry U.S. Tons (Avg. 2014 – 2016)
Does sludge management demonstrate compliance? Yes						
Is additional sludge storage required? No						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? No						
If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in landapplying sludge from this facility						
Is a priority pollutant scan required? Not applicable, design flow of 1.65 MGD is less than 5 MGD.						
Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.						

Sample Point Number: 002- SLUDGE

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Jan 1, 2020 - Dec 31, 2020
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Jan 1, 2020 - Dec 31, 2020
Solids, Total		Percent	Annual	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	
Nitrogen, Total Kjeldahl		Percent	Annual	Composite	
Nitrogen, Ammonium (NH ₄ -N) Total		Percent	Annual	Composite	
Phosphorus, Total		Percent	Annual	Composite	
Phosphorus, Water Extractable		% of Tot P	Annual	Composite	
Potassium, Total Recoverable		Percent	Annual	Composite	

Changes from Previous Permit & Explanation of Limits and Monitoring Requirements

New time frame for PCB monitoring is calendar year 2019. Requirements for land application of municipal sludge are determined in accordance with ch. NR 204 Wis. Adm. Code. Ceiling and high quality limits for metals in sludge are specified in s. NR 204.07(5). Requirements for pathogens are specified in s. NR 204.07(6) and in s. NR 204.07 (7) for vector attraction requirements. Limitations for PCBs are addressed in s. NR 204.07(3)(k).

5 Compliance Schedules

5.1 Adaptive Management Interim Limit Compliance Update

Required Action	Due Date
Progress Report: Submit a progress report on the ability of the wastewater treatment facility to consistently meet the Adaptive Management interim effluent limit of 0.6 mg/L as a 6-month seasonal average with averaging periods of May through October and November through April.	11/30/2019
Comply with Adaptive Management Interim Limit: The Adaptive Management interim effluent limit of 0.6 mg/L as a six-month average goes into effect. The averaging periods are May through October and November through April. Compliance with the 6-month average limit is evaluated at the end of each 6-month period on April 30 and October 31 annually.	11/01/2020

Explanation of Adaptive Management Interim Limit Compliance Update Schedule

This compliance schedule provides Stoughton until November 1, 2020 to comply with the phosphorus adaptive management limit of 0.6 mg/L as a 6-month seasonal average. A progress report on the facility's ability to meet the interim limit is required for the first year of the permit.

5.2 Mercury Pollutant Minimization Program

As a condition of the variance to the water quality based effluent limitation(s) for mercury granted in accordance with s. NR 106.145(6), Wis. Adm. Code, the permittee shall perform the following actions.

Required Action	Due Date
Annual Mercury Progress Reports: Submit an annual mercury progress report. The annual mercury progress report shall: Indicate which mercury pollutant minimization activities or activities outlined in the approved Pollutant Minimization Plan have been implemented; Include an analysis of trends in monthly and annual total effluent mercury concentrations based on mercury sampling; and Include an analysis of how influent and effluent mercury varies with time and with significant loading of mercury such as loads from industries into the collection system. The first annual mercury progress report is to be submitted by the Due Date.	01/31/2020
Annual Mercury Progress Report #2: Submit a mercury progress report as defined above.	01/31/2021
Annual Mercury Progress Report #3: Submit a mercury progress report as defined above.	01/31/2022
Annual Mercury Progress Report #4: Submit a mercury progress report as defined above.	01/31/2023
Final Mercury Report: Submit a final report documenting the success in reducing mercury concentrations in the effluent, as well as the anticipated future reduction in mercury sources and mercury effluent concentrations. The report shall summarize mercury pollutant minimization activities that have been implemented during the current permit term and state which, if any, pollutant minimization activities from the approved pollutant minimization plan were not pursued and why. The report shall include an analysis of trends in monthly and annual total effluent mercury concentrations based on mercury sampling during the current permit term. The report shall also include an analysis of how influent and effluent mercury varies with time and with significant loading of mercury such as loads from industries into the collection system. If the permittee intends to re-apply for a mercury variance per s. NR 106.145, Wis. Adm. Code, for the reissued permit, a detailed pollutant minimization plan outlining the pollutant minimization activities proposed for the upcoming permit term should be submitted along with the final report.	09/30/2023
Annual Mercury Reports After Permit Expiration: In the event that this permit is not reissued on time, the permittee shall continue to submit annual mercury reports each year covering pollutant minimization activities implemented and mercury concentration trends.	

5.3 Explanation of Mercury Pollutant Minimization Program Schedule

Stoughton has applied for a variance from the mercury water quality criterion for the protection of wildlife (1.3 ng/L). As conditions of receiving a mercury variance Stoughton shall maintain effluent quality at or below an alternative mercury effluent (variance) limit of 3.2 ng/L, implement the “Mercury Pollutant Minimization Program (PMP) Plan” dated June 7, 2017 and submit annual mercury progress reports as described in the compliance schedule above.

Special Reporting Requirements

The City of Stoughton in collaboration with Madison Metropolitan Sewerage District, Village of Oregon, and the WDNR Nevin Fish Hatchery have requested and the Department approved a plan to implement a watershed adaptive management

approach. This proposed permit aligns the timeline of permit reissuance and expiration along with adaptive management compliance dates for these facilities.

Attachments:

Water Quality Based Effluent Limits (WQBEL) – May 22, 2017

WET Checklist Summary – May 22, 2017, WQBEL Memo, Page 17

Map – May 22, 2017, WQBEL Memo, Page 20

Adaptive Management Request Form – June 15, 2017

Madison Metropolitan Sewerage District Adaptive Management Plan – January 2017

Madison Metropolitan Sewerage District Adaptive Management Plan Amendment – February 2017

Stoughton Mercury Pollutant Minimization Program (PMP) Plan – June 7, 2017

Stoughton Facility Specific Mercury Variance Data Sheet – July 28, 2017

Substantial Compliance Determination – April 10, 2017

Public Notice –

Proposed Expiration Date:

March 31, 2024

Prepared By:

Phillip Spranger, Wastewater Specialist

Date: October 22, 2018

cc: Amy Garbe

CORRESPONDENCE/MEMORANDUM

DATE: May 22, 2017

FILE REF: 3200

TO: Phillip Spranger - SCR/Fitchburg

FROM: Adrian Stocks - WY/3

*Adrian Stocks for AS*SUBJECT: Water Quality-Based Effluent Limitations for the City of Stoughton
Wastewater Treatment Facility WPDES Permit No. WI-0020338-09

This is in response to your request for an evaluation of the need for water quality-based effluent limitations using Chapters NR 102, 104, 105, 106, 207, 210 and 217 of the Wisconsin Administrative Code (where applicable), for the discharge from the City of Stoughton wastewater treatment facility in Dane County. This municipal wastewater treatment facility (WWTF) discharges to the Yahara River located in the Yahara River and Lake Kegonsa Watershed in the Lower Rock River Basin. This discharge is included in the Rock River TMDL as approved by EPA. The evaluation of the permit recommendations is discussed in more detail in the attached report.

No changes are recommended in the permit limitations for CBOD₅, Total Suspended Solids, Dissolved Oxygen, and, pH. Based on our review, the following recommendations are made on a chemical-specific basis:

Outfall 001

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
CBOD ₅ May-October			33 mg/L 454 lbs/day	25 mg/L		
November-April			40 mg/L	25 mg/L		
TSS			40 mg/L	30 mg/L		1
pH	9.0 s.u.	6.0 s.u.				
Dissolved Oxygen May-October		6.0 mg/L				
Ammonia Nitrogen April-May	28 mg/L		20 mg/L	11 mg/L		2,3
June-September	28 mg/L		28 mg/L	28 mg/L		
October-March	28 mg/L		28 mg/L	18 mg/L		
Fecal Coliforms (May – September)			780#/100 mL (geometric mean)	400#/100 mL (geometric mean)		2
Chromium (+6)	32.04 µg/L		32.04 µg/L	32.04 µg/L		2
Bis(2-ethylhexyl) phthalate	33.92 µg/L		13.33 µg/L	13.33 µg/L		2
Phosphorus				1.0 mg/L	0.6 mg/L	1
Mercury	1.3 ng/L					4
Temperature						5
Chloride						5

Footnotes:

1. Additional phosphorus and TSS mass limitations from the current permit and listed in attachment #1 are required in accordance with the wasteload allocations specified in the Rock River TMDL

- Monthly average Total Phosphorus mass limits are required as listed in the table on page 2.
 - Monthly and weekly average TSS mass limits are required as listed in the table on page 2.
2. Additional limits needed to comply with s. NR 106.07(3), Wis. Adm. Code Expression of Limits are in **bold**.
 3. pH variable ammonia limits (see table below) may be used in place of the 28 mg/L daily maximum limit:

Effluent pH s.u.	NH ₃ -N Limit mg/L	Effluent pH s.u.	NH ₃ -N Limit mg/L	Effluent pH s.u.	NH ₃ -N Limit mg/L
6.0 < pH ≤ 6.1	110	7.0 < pH ≤ 7.1	72	8.0 < pH ≤ 8.1	17
6.1 < pH ≤ 6.2	108	7.1 < pH ≤ 7.2	66	8.1 < pH ≤ 8.2	14
6.2 < pH ≤ 6.3	106	7.2 < pH ≤ 7.3	59	8.2 < pH ≤ 8.3	11
6.3 < pH ≤ 6.4	104	7.3 < pH ≤ 7.4	52	8.3 < pH ≤ 8.4	9.4
6.4 < pH ≤ 6.5	101	7.4 < pH ≤ 7.5	46	8.4 < pH ≤ 8.5	7.8
6.5 < pH ≤ 6.6	98	7.5 < pH ≤ 7.6	40	8.5 < pH ≤ 8.6	6.4
6.6 < pH ≤ 6.7	94	7.6 < pH ≤ 7.7	34	8.6 < pH ≤ 8.7	5.3
6.7 < pH ≤ 6.8	89	7.7 < pH ≤ 7.8	29	8.7 < pH ≤ 8.8	4.4
6.8 < pH ≤ 6.9	84	7.8 < pH ≤ 7.9	24	8.8 < pH ≤ 8.9	3.7
6.9 < pH ≤ 7.0	78	7.9 < pH ≤ 8.0	20	8.9 < pH ≤ 9.0	3.1

4. This is the water quality-based effluent limitation for mercury. An alternative effluent limitation of 3.3 ng/L (equal to the 1-day P₉₉ of representative data) as a daily maximum may be included in the permit in place of the water quality-based effluent limit if the mercury variance application that was submitted is approved by EPA.
5. Monitoring in the fourth year of the permit term

Along with the chemical-specific recommendations mentioned above, the need for acute and chronic whole effluent toxicity (WET) monitoring and limits has also been evaluated for the discharge from the Stoughton WWTF. Following the guidance provided in the Department's November 1, 2016 *Whole Effluent Toxicity Program Guidance Document - Revision #11*, annual acute WET testing is recommended and annual chronic WET testing is recommended in the reissued permit. Tests should be done in rotating quarters, in order to collect seasonal information about this discharge. WET testing shall continue after the permit expiration date (until the permit is reissued).

According to the requirements specified in s. NR 106.08, Wis. Adm. Code, acute and chronic WET limits are required. The acute WET limit should be expressed as 1.0 TU_a as a daily maximum in the effluent limits table of the permit. The chronic WET limit should be expressed as 3.0 TU_c as a monthly average in the effluent limits table of the permit.

Sampling WET concurrently with any chemical-specific toxic substances is recommended. Chronic testing shall be performed using a dilution series of 100%, 75%, 50%, 25% & 12.5%. The Instream Waste Concentration to assess chronic test results is 33%. The primary control and dilution water used in WET tests conducted on Outfall 001 shall be a grab sample collected from the Yahara River.

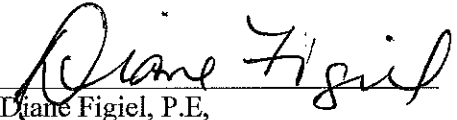
Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Jake Zimmerman at (608) 275-3230 or Jacob.Zimmerman@wisconsin.gov.

Attachments:

1. Water Quality-Based Effluent Limits for the Stoughton WWTF
2. Thermal Effluent Limit Calculation Table
3. Site Map

PREPARED BY: Jacob Zimmerman, Water Resources Engineer

APPROVED BY:

 date: 5/22/17
Diane Figiel, P.E.,
Water Resources Engineer

E-cc: Amy Garbe, P.E., Wastewater Engineer – SCR/Waukesha
Tim Ryan, P.E., Regional Wastewater Supervisor – SCR/Fitchburg

Water Quality-Based Effluent Limitations for the Stoughton Wastewater Treatment Facility

WPDES Permit No. WI-0020338

Prepared by: Jacob Zimmerman

PART 1 – BACKGROUND INFORMATION

Facility Description: The City of Stoughton wastewater treatment facility (WWTF) serves a population of approximately 12,350 people as well as several significant industries. This facility is a conventional activated sludge plant consisting of screening, grit removal, primary settling, and biological treatment including Bio-P removal, final clarification and UV disinfection. Waste sludge is thickened in a dissolved air flotation thickener before being combined with primary sludge and anaerobically digested. The digested sludge is dewatered on a gravity belt thickener before storage. Land spreading on Department approved farmland is the final disposal option for the stored bio-solids. Back up chemical is available to treat side streams (or the forward flow if necessary) for Phosphorus. The collection system for the Stoughton WWTF is a separate sewer system with no constructed overflow points.

Attachment #3 is a site map of the area showing the approximate location of Outfall 001.

Existing Permit Limitations: The current permit, expiring on June 30, 2019 includes the following effluent limitations.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Footnotes
CBOD ₅ May-October			33 mg/L 454 lbs/day	25 mg/L	1
November-April			40 mg/L	25 mg/L	
TSS			40 mg/L	30 mg/L	1, 2
pH	9.0 s.u.	6.0 s.u.			1
Dissolved Oxygen		6.0 mg/L			1
Fecal Coliforms (May – September)				400#/100 mL (geometric mean)	
Phosphorus				1.3 mg/L	3
Ammonia Nitrogen					4
Mercury	3.3 ng/L				5
Chloride					6
Temperature					6
Total Kjeldahl Nitrogen					6
Nitrite + Nitrate					6
Total Nitrogen					6

Attachment #1

Footnotes:

1. These limitations are not being evaluated as part of this review. Because the water quality criteria, reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.
2. Additional limits to comply with the Rock River TMDL are listed below

Total Suspended Solids Effluent Limitations				
Month	Monthly TSS WLA ¹ (tons/month)	Days Per Month	Monthly Ave TSS Effluent Limit ² (lbs/day)	Weekly Ave TSS Effluent Limit ³ (lbs/day)
Jan	6.23	31	402	567
Feb	6.21	28	444	625
March	6.23	31	402	567
April	6.28	30	419	590
May	6.23	31	402	567
June	6.28	30	419	590
July	6.23	31	402	567
Aug	6.23	31	402	567
Sept	6.28	30	419	590
Oct	6.23	31	402	567
Nov	6.28	30	419	590
Dec	6.23	31	402	567

3. Monthly mass limitations required by the Rock River TMDL include:

Total Phosphorus Effluent Limitations	
Month	Monthly Ave Total P Effluent Limit ² (lbs/day)
Jan	4.3
Feb	5.6
March	4.9
April	5.3
May	5.2
June	5.3
July	5.1
Aug	4.6
Sept	4.9
Oct	4.1
Nov	4.0
Dec	3.9

Attachment #1

4. Daily maximum ammonia limits are dependent upon pH and listed below:

Daily Maximum Ammonia Limitations (mg/L)								
pH	Criterion	Limit	pH	Criterion	Limit	pH	Criterion	Limit
6	54.99	109.98	7	36.09	72.19	8	8.41	16.82
6.2	53.17	106.34	7.2	29.54	59.08	8.2	5.73	11.45
6.4	50.53	101.06	7.4	22.97	45.94	8.4	3.88	7.77
6.6	46.84	93.69	7.6	17.03	34.06	8.6	2.65	5.30
6.8	42.00	83.99	7.8	12.14	24.28	8.8	1.84	3.69
						9	1.32	2.65

5. This is an alternate concentration limit in accordance with NR 106.145(5).
6. Monitoring only

Receiving Water Information:

- Name: Yahara River (WBIC 798300)
- Classification: Warmwater sport fish community, non-public water supply.
- Low Flow: The following 7-Q₁₀ and 7-Q₂ values are from USGS Station LR 43,5A, at the Stoughton Dam just upstream of where Outfall 001 is located. The Harmonic Mean has been estimated as recommended in *State of Wisconsin Water Quality Rules Implementation Plan* (Publ. WT-511-98)
7-Q₁₀ = 21cfs (cubic feet per second)
7-Q₂ = 41 cfs
90-Q₁₀ = 34.85 cfs
Harmonic Mean Flow = 93.16 cfs

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
7-Q ₁₀ (cfs)	97	79	76	46	54	27	24	33	32	36	100	120
7-Q ₂ (cfs)	180	180	170	150	140	96	87	97	110	130	220	200

- Hardness = 257 mg/L as CaCO₃. This value represents the geometric mean of data from five WET tests which occurred between November 2014 and August 2016.
- % of low flow used to calculate limits: 25%
- Source of background concentration data: The numerical values are shown in the tables below. If no data is available, the background concentration is assumed to be negligible and a value of zero is used in the computations. Background data for calculating effluent limitations for Ammonia Nitrogen are described later.
- Multiple dischargers: There are no other dischargers to the Yahara River which would impact the mixing zone of Stoughton's outfall.
- Impaired water status: The Yahara River is listed as impaired for phosphorus and total suspended solids above and below the outfall to Lake Kegonsa.

Effluent Information:

- Design Flow Rate(s):
Annual average = 1.65 MGD (Million Gallons per Day)
For reference, the actual average flow from 2016 was 0.939 MGD.
- Hardness = 352 mg/L as CaCO₃. This value represents the geometric mean of four data points from August 9, 2016- September 15, 2016 as reported on the permit application.

Attachment #1

- Effluent characterization: This facility is categorized as a major municipal discharger so the permit application required effluent sample analyses for all of the “priority pollutants” except for the Dioxins and Furans, plus Chloride and Hardness.

Sample Date	Chloride mg/L	Sample Date	Chloride mg/L	Sample Date	Chloride mg/L
01/03/2017	460	02/01/2017	410	03/01/2017	330
01/11/2017	440	02/06/2017	400	03/15/2017	400
01/17/2017	560	02/14/2017	350	03/21/2017	420
01/24/2017	380	02/22/2017	380	03/28/2017	400
1-day P ₉₉ = 566.58 mg/L					
4-day P ₉₉ = 483.99 mg/L					

Sample Date	Copper µg/L	Sample Date	Copper µg/L	Sample Date	Copper µg/L
08/29/2016	4.5	09/15/2016	5.8	09/29/2016	4.3
09/01/2016	4.5	09/19/2016	4.9	10/03/2016	5.8
09/06/2016	6.4	09/22/2016	4.2	10/06/2016	4.7
09/12/2016	5.5	09/26/2016	4.9		
1-day P ₉₉ = 6.96 µg/L					
4-day P ₉₉ = 5.94 µg/L					

Sample Date	Mercury ng/L	Sample Date	Mercury ng/L	Sample Date	Mercury ng/L
09/30/2014	0.76	09/22/2015	1.2	08/30/2016	1.3
12/09/2014	1.1	12/07/2015	2	11/03/2016	1.5
03/31/2015	2.6	03/02/2016	2.5	02/16/2017	1.8
05/18/2015	1.9	05/31/2016	1.2		
1-day P ₉₉ = 3.46 ng/L					
4-day P ₉₉ = 2.43 ng/L					
30-day P ₉₉ = 1.89 ng/L					

- Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 2 below, in the column titled “MEAN EFFL. CONC.”.
- Water Source: City of Stoughton Utility
- Additives: The city uses chlorine and fluoride in the drinking water system. Alum is available to treat side streams (or the forward flow if necessary) for phosphorus at the wastewater treatment facility.

**PART 2 – WATER QUALITY-BASED EFFLUENT LIMITATIONS
FOR TOXIC SUBSTANCES – EXCEPT AMMONIA NITROGEN**

In general, permit limits for toxic substances are recommended whenever any of the following occur:

1. The maximum effluent concentration exceeds the calculated limit (s. NR 106.05(3), Wis. Adm. Code)
2. If 11 or more detected results are available in the effluent, the upper 99th percentile (or P₉₉) value exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
3. If fewer than 11 detected results are available, the mean effluent concentration exceeds 1/5 of the calculated limit (s. NR 106.05(6), Wis. Adm. Code)

The following tables list the water quality-based effluent limitations for this discharge along with the results of effluent sampling for all of the detected substances. All concentrations are expressed in term of micrograms per Liter (µg/L), except for hardness and chloride (mg/L) and mercury (ng/L).

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 16.8 cfs, (1-Q₁₀ (estimated as 80% of 7-Q₁₀)).

SUBSTANCE	REF. HARD.* mg/L	ATC	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P ₉₉	1-day MAX. CONC.
Arsenic		339.80	679.60	135.92	<1.0		
Cadmium	352	43.65	87.30	17.46	<0.14		
Chromium (+3)	301	4445.84	8891.68	1778.34	0.76		
Chromium (+6)		16.02	32.04	6.41	11		
Copper	352	50.87	101.74			6.96	6.4
Lead	352	360.70	721.40	144.28	<1.5		
Mercury - ng/L		830	166			3.46	2.6
Nickel	268	1048.88	2097.76	419.55	1.3		
Zinc	333	344.68	689.36	137.87	26		
Cyanide		45.78	91.56	18.31	0.028		
Chloride - mg/L		757	1514			566.58	560
Bis(2-ethylhexyl) phthalate***			33.92	6.78	11		

* The indicated hardness may differ from the effluent hardness because the effluent hardness exceeded the maximum range in ch. NR 105 over which the acute criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.

** The 2 x ATC method of limit calculation yields a more restrictive limit than consideration of ambient concentrations and 1-Q₁₀ flow rates per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016.

***The limit is set equal to the secondary acute value since no ATC is available for this substance pursuant s. NR 106.06 (3) (b) 2, Wis. Adm. Code.

Attachment #1

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)RECEIVING WATER FLOW = 5.25 cfs (¼ of the 7-Q₁₀)

SUBSTANCE	REF. HARD.* mg/L	CTC	MEAN BACK- GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P ₉₉
Arsenic		152.20		465.19	93.04	<1.0	
Cadmium	175	3.82		11.68	2.34	<0.14	
Chromium (+3)	257	286.20		874.74	174.95	0.76	
Chromium (+6)		10.98		33.56	6.71	11	
Copper	257	23.21		70.94			5.94
Lead	257	69.72		213.09	42.62	<1.5	
Mercury – ng/L		440		1340			2.43
Nickel	257	115.99		354.51	70.90	1.3	
Selenium		5.00		15.28	3.06	<2.0	
Zinc	257	274.81		839.93	167.99	26	
Cyanide		11.47		35.06	7.01	0.028	
Chloride - mg/L		395		1207.28			483.99
Bis(2-ethylhexyl) phthalate***		4.36		13.33	2.67	11	

* The indicated hardness may differ from the receiving water hardness because the receiving water hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the chronic criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.

Monthly Average Limits based on Wildlife Criteria (WC)RECEIVING WATER FLOW = 8.71 cfs (¼ of the 90-Q₁₀)

SUBSTANCE	WC	MEAN BACK- GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	30-day P ₉₉
Mercury (ng/L)	1.30	>1.30	1.30			1.89

Monthly Average Limits based on Human Threshold Criteria (HTC)

RECEIVING WATER FLOW = 23.29 cfs (¼ of the Harmonic Mean)

SUBSTANCE	HTC	MEAN BACK- GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Antimony	373		3776	755	0.32
Cadmium	370		3745	749	<0.14
Chromium (+3)	3.82E+06		38648172	7729634	0.76
Chromium (+6)	7636		77296	15459	11
Lead	140		1417	283	<1.5
Mercury (ng/L)	1.50		15.2	3.0	1.62
Nickel	43000		435273	87055	1.3
Selenium	2600		26319	5264	<2.0
Cyanide	9300		94140	18828	0.028

Monthly Average Limits based on Human Cancer Criteria (HCC)

RECEIVING WATER FLOW = 23.29 cfs (¼ of the Harmonic Mean)

SUBSTANCE	HCC	MEAN BACK- GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Arsenic	13.3		134.6	26.9	<1.0
Bis(2-ethylhexyl) phthalate***	6.9		70	14	11

Because only one substance for which Human Cancer Criteria exists was detected, determination of the cumulative cancer risk is not needed.

Conclusions and Recommendations: Based on a comparison of the effluent data and calculated effluent limitations, effluent limitations are apparently needed for mercury, chromium +6, and Bis(2-ethylhexyl) phthalate.

Mercury – The previous permit included a variance from the calculated WQBEL for Mercury of 3.3 ng/L as a daily maximum. A review of data from the September 2014 through February 2017 indicates the 30 day P₉₉ is 1.89 ng/L, which is above the Wildlife Criterion of 1.3 ng/L. Therefore, **a mercury effluent limit is recommended for the Stoughton WWTF.**

Section NR 106.145(4) allows for eligibility for an alternative mercury effluent limitation if the permittee submits an application for an alternative mercury limit, which includes the submittal of a pollutant minimization plan. Stoughton has submitted this application. Section NR 106.145(5) specifies that an alternative limitation shall equal the 1-day P₉₉ of the effluent data, and shall be expressed as a daily maximum concentration. The applicable alternative mercury limitation of 3.46 ng/L, as a daily maximum. However since the current permit has an alternative mercury limit which is more stringent, that limit remains applicable. **Therefore if a variance is granted and approved by US Environmental Protection Agency a limit of 3.3 ng/L as a daily maximum is recommended.**

Chromium (+6) – Since the one detected chromium (+6) sample is greater than 1/5th of the calculated effluent, **a limit for chromium (+6) is recommended.** Due to the lack of additional samples, it is recommended a compliance schedule is given to allow time to collect more data to determine if this one sample is representative of the effluent. Monthly sampling during the first year of the permit term is recommended.

Bis(2-ethylhexyl) phthalate- Since the one detected Bis(2-ethylhexyl) phthalate samples is greater than 1/5th of the calculated daily max and weekly average limits, **both daily max and weekly average limits are recommended.**

Bis(2-ethylhexyl) phthalate sample contamination has been identified by other dischargers, originating from the vinyl tubing used in the automatic sampler. If similar tubing was used for the collection of the sample included in this permit application, contamination is suspected and Stoughton representatives should be advised to investigate this possibility. If they can demonstrate such sample contamination, that the sample result of 11 µg/L is not representative of the effluent discharged, prior to the end of the 30-day Public Notice period preceding permit reissuance, the need for effluent limitations for this substance will

be reviewed. The permit may be written with a compliance schedule to attain compliance with the effluent limitations for this substance.

Chloride- Consistent with the current permit, **four samples per month (on consecutive days) are recommended.** This allows for averaging of the results to compare with the final water quality based effluent limit, and also allows the use of the average in determining future interim limits, if needed.

PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR AMMONIA NITROGEN

Section NR 106.33(2) was updated effective September 1, 2016. As a result, seasonal 20 and 40 mg/L thresholds for including ammonia limits in municipal discharge permits are no longer applicable under current rules. As such, s. NR 106.33(1) enables the Department to determine the need to include ammonia limits in municipal discharge permits based on the statistical comparisons in s. NR 106.05.

Daily Maximum Limits based on Acute Toxicity Criteria (ATC):

Daily maximum limitations are based on acute toxicity criteria, which are a function of the effluent pH and the receiving water classification. The acute toxicity criterion (ATC) for ammonia is calculated using the following equation.

$$\text{ATC in mg/L} = [A \div (1 + 10^{(7.204 - \text{pH})})] + [B \div (1 + 10^{(\text{pH} - 7.204)})]$$

Where:

A = 0.411 and B = 58.4 for a Warmwater Sport fishery, and
pH (s.u.) = that characteristic of the effluent.

The effluent pH data for the past six years was examined as part of this evaluation. A total of 1097 sample results were reported from January 2010 through March 2017. The maximum reported value was 7.8 s.u. (Standard pH Units), and a pH of greater than 7.7 s.u. was reported nine times. More than 99% of the time the pH was 7.7 s.u. or less. The 1-day P_{99} , calculated in accordance with s. NR 106.05(5), is 7.72 s.u. The mean plus the standard deviation multiplied by a factor of 2.33, an estimate of the upper ninety ninth percentile for a normally distributed dataset, is 7.72 s.u. A value of 7.7 s.u. is believed to represent the maximum reasonably expected pH, and therefore most appropriate for determining daily maximum limitations for ammonia nitrogen. Substituting a value of 7.7 s.u. into the equation above yields an ATC = 13.96 mg/L and a computed daily maximum limit of 27.91 mg/L.

Updates to subchapter IV of Ch. NR 106, Wis. Adm. Code (effective September 1, 2016) outline the option for the Department to implement use of the 1- Q_{10} receiving water low flow in order to calculate daily maximum ammonia nitrogen limits if it is determined that the previous method of acute ammonia limit calculation ($2 \times \text{ATC}$) is not sufficiently protective of the fish and aquatic life. Since the $Q_s:Q_e$ ratio is greater than 2:1; the $2 \times \text{ATC}$ method will yield the most stringent limits. Therefore the limits based upon the 1- Q_{10} receiving water low flow will not be calculated.

Presented below is a table of daily maximum limitations corresponding to various effluent pH values. The current permit allows for use of the variable daily maximum ammonia limits so this table has been updated to reflect current discharge conditions. Use of this table is not necessarily recommended in the permit, but it is presented herein should the permittee wish to use this option.

Daily Maximum Limits – WWSF

Effluent pH s.u.	NH ₃ -N Limit mg/L	Effluent pH s.u.	NH ₃ -N Limit mg/L	Effluent pH s.u.	NH ₃ -N Limit mg/L
6.0 < pH ≤ 6.1	110	7.0 < pH ≤ 7.1	72	8.0 < pH ≤ 8.1	17
6.1 < pH ≤ 6.2	108	7.1 < pH ≤ 7.2	66	8.1 < pH ≤ 8.2	14
6.2 < pH ≤ 6.3	106	7.2 < pH ≤ 7.3	59	8.2 < pH ≤ 8.3	11
6.3 < pH ≤ 6.4	104	7.3 < pH ≤ 7.4	52	8.3 < pH ≤ 8.4	9.4
6.4 < pH ≤ 6.5	101	7.4 < pH ≤ 7.5	46	8.4 < pH ≤ 8.5	7.8
6.5 < pH ≤ 6.6	98	7.5 < pH ≤ 7.6	40	8.5 < pH ≤ 8.6	6.4
6.6 < pH ≤ 6.7	94	7.6 < pH ≤ 7.7	34	8.6 < pH ≤ 8.7	5.3
6.7 < pH ≤ 6.8	89	7.7 < pH ≤ 7.8	29	8.7 < pH ≤ 8.8	4.4
6.8 < pH ≤ 6.9	84	7.8 < pH ≤ 7.9	24	8.8 < pH ≤ 8.9	3.7
6.9 < pH ≤ 7.0	78	7.9 < pH ≤ 8.0	20	8.9 < pH ≤ 9.0	3.1

Weekly Average & Monthly Average Limits based on Chronic Toxicity Criteria (CTC):

The ammonia limit calculation also warrants evaluation of weekly and monthly average limits based on chronic toxicity criteria for ammonia, since those limits relate to the assimilative capacity of the receiving water.

Weekly average and monthly average limits for Ammonia Nitrogen are based on chronic toxicity criteria. The 30-day chronic toxicity criterion (CTC) for ammonia in waters classified as a Warmwater sport fishery is calculated by the following equation.

$$CTC = E \times \{ [0.0676 \div (1 + 10^{(7.688 - pH)})] + [2.912 \div (1 + 10^{(pH - 7.688)})] \} \times C$$

Where:

pH = the pH (su) of the receiving water,

E = 0.854,

C = the minimum of 2.85 or $1.45 \times 10^{(0.028 \times (25 - T))}$ – (Early Life Stages Present), or

C = $1.45 \times 10^{(0.028 \times (25 - T))}$ – (Early Life Stages Absent), and

T = the temperature (°C) of the receiving water – (Early Life Stages Present), or

T = the maximum of the actual temperature (°C) and 7 – (Early Life Stages Absent)

The 4-day criterion is simply equal to the 30-day criterion multiplied by 2.5. The 4-day criteria are used in a mass-balance equation with the 7-Q₁₀ (4-Q₃, if available) to derive weekly average limitations. And the 30-day criteria are used with the 30-Q₅ (estimated as 85% of the 7-Q₂ if the 30-Q₅ is not available) to derive monthly average limitations. The stream flow value is further adjusted to temperature. 100% of the flow is used if the Temperature ≥ 16 °C. Only 25% of the flow is used if the Temperature < 11 °C. And 50% of the flow is used if the Temperature ≥ 11 °C but < 16 °C.

The rules provide a mechanism for less stringent weekly average and monthly average effluent limitations when early life stages (ELS) of critical organisms are absent from the receiving water. This applies only when the water temperature is less than 14.5 °C, during the winter and spring months. Burbot, an early spawning species, are not believed to be present in the Yahara River, based on conversations with local

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fisheries biologists. So “ELS Absent” criteria apply from October through March, and “ELS Present” criteria will apply from April through September.

Since minimal ambient data is available, the “default” basin assumed values are used for Temperature, pH and background ammonia concentrations, shown in the table below, with the resulting criteria and effluent limitations.

		Spring	Summer	Winter
		April-May	June-Sept	Oct-Mar
Background Information:	7-Q ₁₀ (cfs)	21	21	21
	7-Q ₂ (cfs)	41	41	41
	Ammonia (mg/L)	0.09	0.07	0.135
	Temperature (°C)	6	19	4
	pH (s.u.)	7.95	7.95	7.95
	% of Flow used	25	100	25
	Reference Weekly Flow (cfs)	5.25	21	5.25
	Reference Monthly Flow (cfs)	8.71	34.85	8.71
Criteria mg/L:	4-day Chronic			
	Early Life Stages Present	6.53	5.02	
	Early Life Stages Absent			10.61
	30-day Chronic			
	Early Life Stages Present	2.61	2.01	
	Early Life Stages Absent			4.24
Effluent Limitations mg/L:	Weekly Average			
	Early Life Stages Present	19.78	45.71	
	Early Life Stages Absent			32.14
	Monthly Average			
	Early Life Stages Present	11.22	28.44	
	Early Life Stages Absent			18.26

Reasonable Potential:

The following table evaluates the statistics based upon ammonia data reported from January 2010 through March 2017 with those results being compared to the calculated limits to determine the need to include ammonia limits in the permit for the months and averaging periods where there currently isn't a limit. That need is determined by calculating 99th upper percentile (or 1-day, 4-day, and 30 day P₉₉'s) values for ammonia during each of the three periods of months and comparing to the daily maximum, weekly average, and monthly average limits, respectively.

	Ammonia mg/L April - May	Ammonia mg/L June - September	Ammonia mg/L October - March
1-day P ₉₉	32.70	35.75	37.63
4-day P ₉₉	20.64	19.68	22.62
30-day P ₉₉	14.53	11.21	15.02
Mean*	11.67	7.62	11.58
Std	6.16	7.24	7.30
Sample size	181	366	584
Range	1.7-33.60	0.09-35.80	<0.022-39.0

Conclusions and Recommendations:

In summary, after rounding to two significant figures, the following effluent limitations for Ammonia Nitrogen are recommended for Stoughton. No mass limitations are recommended in accordance with s. NR 106.32(5). Additional limitations are discussed in Part 6.

Months Applicable	April-May	June-Sept	Oct-Mar
Daily Maximum	28	28	28
Weekly Average	20	-	-
Monthly Average	11	-	-

PART 4 –PHOSPHORUS

Section NR 217.16, Wis. Adm. Code states that the Department may include a TMDL-derived water quality based effluent (WQBEL) for phosphorus in addition to, or in lieu of, a s. NR 217.13, Wis. Adm. Code WQBEL in a WPDES permit. The Rock River TMDL was developed to protect the water quality of impaired waters within the watershed and the discharge from the Stoughton WWTF is to the Yahara River. Since the Yahara River was listed as impaired prior to TMDL development the TMDL-based phosphorus limits were included in the permit at the last reissuance rather than the s. NR 217.13, Wis. Adm. Code WQBEL. Stoughton was unable to meet these limits, and a compliance schedule and an interim limit of 1.3 mg/L were required in the permit.

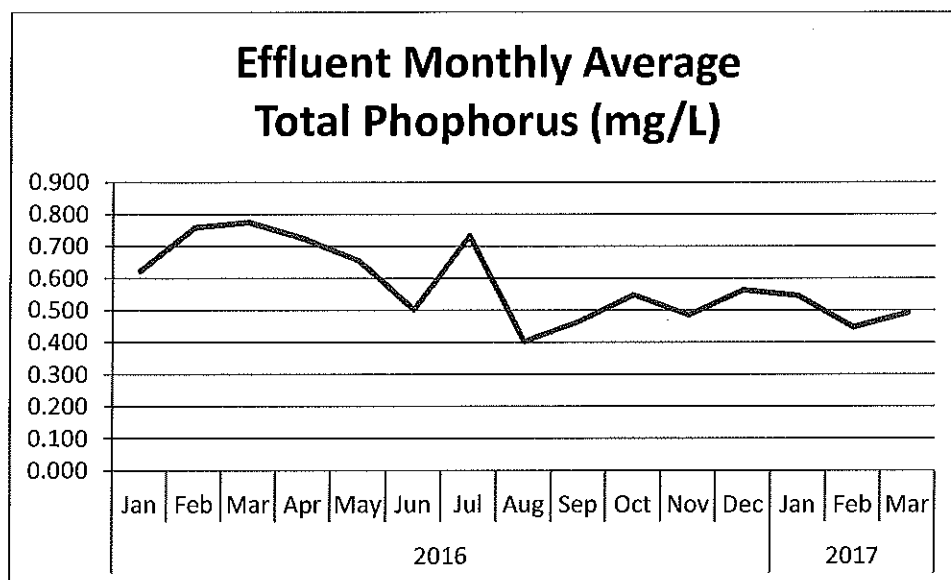
The Yahara River remains impaired for phosphorus; meaning the Rock River TMDL limits remain applicable. The following limits from the current permit are recommended to be retained for phosphorus:

Total Phosphorus Effluent Limitations	
Month	Monthly Ave² (lbs/day)
Jan	4.3
Feb	5.6
March	4.9
April	5.3
May	5.2
June	5.3
July	5.1
Aug	4.6
Sept	4.9
Oct	4.1
Nov	4.0
Dec	3.9

As part of the compliance schedule, Stoughton has notified the Department of its intent to use adaptive management to comply with the limits. In accordance with s. NR 217.18 (3) (e) 2, Wis. Adm. Code, the effluent concentration limits shall be 0.6 mg/L expressed as a six-month average and 1.0 mg/L as a

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monthly average in the first permit of an adaptive management plan. If the permittee is unable to meet this value, a compliance schedule and an interim limit of 1.0 mg/L may be included in the reissued permit. Based upon available data from the previous 12 months, it appears that Stoughton can comply with the 0.6 mg/L interim limit upon permit issuance. **Therefore, both concentration limits of 0.6 mg/L as a six-month average and 1.0mg/l as a monthly average are recommended in addition to the Rock River TMDL limits.**



Six-Month Average Concentration (mg/L)	
May-Oct	0.551
Nov-Apr	0.543

Monthly Average Concentration (mg/L)	
Apr-16	0.724
May-16	0.655
Jun-16	0.502
Jul-16	0.733
Aug-16	0.403
Sep-16	0.465
Oct-16	0.548
Nov-16	0.485
Dec-16	0.563
Jan-17	0.545
Feb-17	0.448
Mar-17	0.492

PART 5 –THERMAL

New surface water quality standards for temperature took effect on October 1, 2010. These new regulations are detailed in chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. Daily maximum and weekly average temperature criteria are available for the 12 different months of the year depending on the receiving water classification.

In accordance with s. NR 106.53(2)(b), the highest daily maximum flow rate for a calendar month is used to determine the acute (daily maximum) effluent limitation. In accordance with s. NR 106.53(2)(c), the highest 7-day rolling average flow rate for a calendar month is used to determine the sub-lethal (weekly average) effluent limitation. These values were based off of actual flow reported from January 2010-March 2017.

The table below summarizes the maximum temperatures reported during monitoring in 2012. Comparing the representative highest effluent temperature to the calculated effluent limits determines the reasonable potential of exceeding the effluent limits. The complete thermal table used for calculation is attached.

Month	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Weekly Maximum	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)	(°F)	(°F)
JAN	44	46	-	120
FEB	46	52	-	120
MAR	57	57	-	120
APR	58	59	88	120
MAY	63	65	105	120
JUN	70	70	100	115
JUL	74	74	103	100
AUG	74	74	-	120
SEP	73	73	-	120
OCT	67	68	117	120
NOV	61	62	-	120
DEC	59	60	-	120

Reasonable Potential:

Based on the available effluent data, **no effluent limits are recommended for temperature**. One year of temperature monitoring is recommended during the fourth year of the next permit term.

PART 6– EXPRESSION OF LIMITS

Revisions to ch. NR 106 align Wisconsin's water quality-based effluent limitations with 40 CFR 122.45(d), which requires WPDES permits contain the following limits, whenever practicable and necessary to protect water quality:

- Weekly average and monthly average limitations for publically owned treatment works (POTWs), and
- Daily maximum and monthly average limitations for all other discharges.

Stoughton is a POTW, and is therefore subject to weekly average and monthly average limitations whenever limitations are determined to be necessary.

This evaluation provides additional limitations necessary to comply with the expression of limits in s. NR 106.07. Pollutants already compliant with s. NR 106.07 or that have an approved impracticability demonstration, are excluded from this evaluation including water-quality based effluent limitations for phosphorus, temperature, and pH, among other parameters.

Additional limitations needed to comply with s. NR 106.07 Expression of limits:

Parameter	Daily Maximum	Weekly Average	Monthly Average	Weekly Geometric Mean	Monthly Geometric Mean	Multiplication Factor (CV)	Assumed Monitoring Frequency (n)
Fecal Coliforms				780 #/100mL ₃	400 #/100ml	1.95	8
Ammonia Nitrogen							
April-May	28 mg/L	20 mg/L	11 mg/L				
June-Sept	28 mg/L	28 mg/L ₁	28 mg/L ₁				
Oct-March	28 mg/L	28 mg/L ₁	18 mg/L ₁				
Chromium (+6)	32.04 µg/L	32.04 µg/L ₁	32.04 µg/L ₁				
Bis(2-ethylhexyl) phthalate	33.92 µg/L	13.33 µg/L	13.33 µg/L ₂				

Methods for calculation:

The methods for calculating limitations for municipal POTWs to conform to 40 CFR 122.45(d) are specified in s. NR 106.07(3), and are as follows:

1. Whenever a daily maximum limitation is determined necessary to protect water quality, a weekly and monthly average limitation shall also be included in the permit and set equal to the daily maximum limit or the calculated weekly average and monthly average water quality based effluent limitations, whichever is more restrictive.
2. Whenever a weekly average limitation is determined necessary to protect water quality, a monthly average limitation shall also be included in the permit and set equal to the weekly average limit unless a more restrictive limit is already determined necessary to protect water quality.
3. Whenever a monthly average limitation is determined necessary to protect water quality, a weekly average limit shall be calculated using the following procedure and included in the permit unless a more restrictive limit is already determined necessary to protect water quality:

$$\text{Weekly Average Limitation} = (\text{Monthly Average Limitation} \times \text{MF})$$

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Where:

MF= Multiplication factor as defined in Table 1

CV = Standard deviation/arithmetic mean,

= 0.6 for < 10 data points and for fecal coliform

n= the number of samples per month required in the permit

s. NR 106.07 (3) (e) 4. Table 1 — Multiplication Factor (for CV = 0.6)

CV	n=1	n=2	n=3	n=4	n=8	n=12	n=16	n=20	n=24	n=30
0.6	1.00	1.31	1.51	1.64	1.95	2.12	2.23	2.30	2.36	2.43

Note: This methodology is based on the *Technical Support Document for Water Quality-based Toxics Control* (March 1991). PB91-127415.

PART 7 – WHOLE EFFLUENT TOXICITY (WET)

WET testing is used to measure, predict, and control the discharge of toxic materials that may be harmful to aquatic life. In WET tests, organisms are exposed to a series of effluent concentrations for a given time and effects are recorded. The following evaluation is based on procedures in the Department's WET Program Guidance Document (revision #11, dated November 1, 2016).

- Acute tests predict the concentration that causes lethality of aquatic organisms during a 48 to 96-hour exposure. In order to assure that a discharge is not acutely toxic to organisms in the receiving water, WET tests must produce a statistically valid LC₅₀ (Lethal Concentration to 50% of the test organisms) greater than 100% effluent.
- Chronic tests predict the concentration that interferes with the growth or reproduction of test organisms during a seven-day exposure. In order to assure that a discharge is not chronically toxic to organisms in the receiving water, WET tests must produce a statistically valid IC₂₅ (Inhibition Concentration) greater than the instream waste concentration (IWC). The IWC is an estimate of the proportion of effluent to total volume of water (receiving water + effluent). The IWC of 33% shown in the WET Checklist summary below was calculated according to the following equation, as specified in s. NR 106.03(6):

$$\text{IWC (as \%)} = Q_e \div \{(1 - f)Q_e + Q_s\} \times 100$$

Where:

Q_e = annual average flow = 2.56 cfs

f = fraction of the Q_e withdrawn from the receiving water = 0

Q_s = ¼ of the 7-Q₁₀ = 21 cfs ÷ 4 = 5.25 cfs

- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), a synthetic (standard) laboratory water may be used as the dilution water and primary control in acute WET tests, unless the use of different dilution water is approved by the Department prior to use. The primary control water must be specified in the WPDES permit.
- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), receiving water must be used as the dilution water and primary control in chronic WET tests, unless the use of different dilution water is approved by the Department prior to use. The dilution water used in WET tests conducted on Outfall 001 shall be a grab sample collected from the Yahara River. The specific receiving water location must be specified in the WPDES permit.

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- Shown below is a tabulation of all available WET data for Outfall 001. Efforts are made to insure that decisions about WET monitoring and limits are made based on representative data. Data which is not believed to be representative of the discharge is not included in reasonable potential calculations. The table below differentiates between tests used and not used when making WET determinations.

WET Data History

Date Test Initiated	Acute Results				Chronic Results				Footnotes or Comments
	LC ₅₀ % (% survival in 100% effluent)				IC ₂₅ %				
	<i>C. dubia</i>	Fathead minnow	Pass or Fail?	Used in RP?	<i>C. dubia</i>	Fathead Minnow	Pass or Fail?	Use in RP?	
11/11/2014	>100	>100	Pass	Yes	94.1	>100	Pass	Yes	
02/24/2015	>100	>100	Pass	Yes	72.6	82.7	Pass	Yes	
06/07/2016	>100	81	Fail	Yes	35.7	32.3	Fail	Yes	
08/02/2016	>100	>100	Pass	Yes	>100	>100	Pass	Yes	Retest
08/30/2016	>100	>100	Pass	Yes	77.5	>100	Pass	Yes	Retest

Footnotes:

- WET reasonable potential is determined by multiplying the highest toxicity value that has been measured in the effluent by a safety factor, in order to predict the likelihood (95% probability) of toxicity occurring in the effluent above the applicable WET limit. The safety factor used in the equation changes based on the number of toxicity detects in the dataset. The fewer detects present, the higher the safety factor, because there is more uncertainty surrounding the predicted value. **WET limits must be given, according to s. NR 106.08(6), Wis. Adm. Code, whenever the applicable Reasonable Potential equation results in a value greater than 1.0.**

According to s. NR 106.08(6) (d), TUa effluent values are equal to zero whenever toxicity is not detected (i.e. when the LC50, IC25 or IC 50 \geq 100 %)

Acute Reasonable Potential = [(TUa effluent) (B)]

TUa (maximum) 100/LC50	B (multiplication factor from s. NR 106.08(5)(c), Wis. Adm. Code, Table 4)
100/81	6.2 Based on 1 detects

$$[(TUa \text{ effluent}) (B)] = 7.65 > 1.0$$

Chronic Reasonable Potential = [(TUa effluent) (B) (IWC)]

TUa (maximum) 100/IC25	B (multiplication factor from s. NR 106.08(5)(c), Wis. Adm. Code, Table 4)	IWC
100/32.3	2.3 Based on 4 detects	33%

$$[(TUa \text{ effluent}) (B) (IWC)] = 2.35 > 1.0$$

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Therefore, reasonable potential is shown for acute and chronic WET using the procedures in s. NR 106.08(6) and representative data from November 2014-August 2016.

Expression of WET limits

Acute WET limit = 1.0 TU_a (daily maximum)

Chronic WET limit = 3.0 TU_c (monthly average)

The WET Checklist was developed to help DNR staff make recommendations regarding WET limits, monitoring, and other permit conditions. The Checklist steps the user through a series of questions that evaluate the potential for effluent toxicity. The Checklist indicates whether acute and chronic WET limits are needed, based on requirements specified in s. NR 106.08, Wis. Adm. Code, and recommends monitoring frequencies based on points accumulated during the Checklist analysis. As toxicity potential increases, more points accumulate and more monitoring is recommended to insure that toxicity is not occurring. The completed WET Checklist recommendations for this permittee are summarized in the table below. Staff recommendations, based on the WET Checklist and best professional judgment, are provided below the summary table. For guidance related to RP and the WET Checklist, see Chapter 1.3 of the WET Guidance Document: <http://dnr.wi.gov/topic/wastewater/WETguidance.html>.

WET Checklist Summary

	Acute	Chronic
AMZ/IWC	Not Applicable. 0 Points	IWC = 33 %. 0 Points
Historical Data	5 tests used to calculate RP = 7.65. 1 test failed	5 tests used to calculate RP = 2.66 1 test failed
Effluent Variability	Little variability, no violations or upsets, consistent WWTF operations 0 Points	Same as Acute. 0 Points
Receiving Water Classification	Full Fish & Aquatic Life 5 Points	Same as Acute. 5 Points
Chemical-Specific Data	Limits for 2 substances based on ATC: Bis(2-Ethylhexyl) phthalate and Chromium (+6) Additional detects: Antimony, Chromium (+3), Copper, Lead, Mercury, Nickel, Zinc, Cyanide, and Chloride 11 Points	Limits for 2 substances based on CTC: Bis(2-Ethylhexyl) phthalate and Chromium (+6) Additional detects: Antimony, Chromium (+3), Copper, Lead, Mercury, Nickel, Zinc, Cyanide, and Chloride 11 Points
Additives	0 Biocides and 0 Water Quality Conditioners added. SorbX-100 Used: No 0 Points	No additives are present. 0 Points

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Discharge Category	3 Industrial Contributors: B&G Foods Inc., Color-Con, Uniroyal Global Engineering Products, LLC 7 Points	Same as Acute. 7 Points
Wastewater Treatment	Secondary or Better 0 Points	Same as Acute. 0 Points
Downstream Impacts	No impacts known 0 Points	Same as Acute. 0 Points
Total Checklist Points:	23 Points	23 Points
Recommended Monitoring Frequency (from Checklist):	1x yearly	1x yearly
Limit Required?	Yes Limit = 1.0 TU _a	Yes Limit = 3.0 TU _c
TRE Recommended? (from Checklist)	No	No

- A minimum of annual acute and chronic monitoring is required because acute and chronic WET limits are required. Federal regulations at 40 CFR Part 122.44(i) require that monitoring occur at least once per year when a limit is present.
- A minimum of annual acute and chronic monitoring is recommended because Stoughton is a major municipal discharger with a design flow in excess of 1.0 MGD. Federal regulations at 40 CFR Part 122.21(j) requires at least 4 acute and chronic WET tests with each permit application on samples collected since the previous reissuance. Therefore, annual monitoring is recommended in the permit term, so that data will be available for the next permit application.

Conclusions and Recommendations:

Following the guidance provided in the Department's WET Program Guidance Document (revision #11, dated November 1, 2016), based upon the point totals generated by the WET Checklist, other information given above, and Chapter 1.3 of the WET Guidance Document, **annual acute WET testing is recommended and annual chronic WET testing is recommended in the reissued permit.** Tests should be done in rotating quarters, in order to collect seasonal information about this discharge. WET testing shall continue after the permit expiration date (until the permit is reissued).

According to the requirements specified in s. NR 106.08, Wis. Adm. Code, acute and chronic WET limits are required. **The acute WET limit should be expressed as 1.0 TU_a as a daily maximum in the effluent limits table of the permit. The chronic WET limit should be expressed as 3.0 TU_c as a monthly average in the effluent limits table of the permit.**

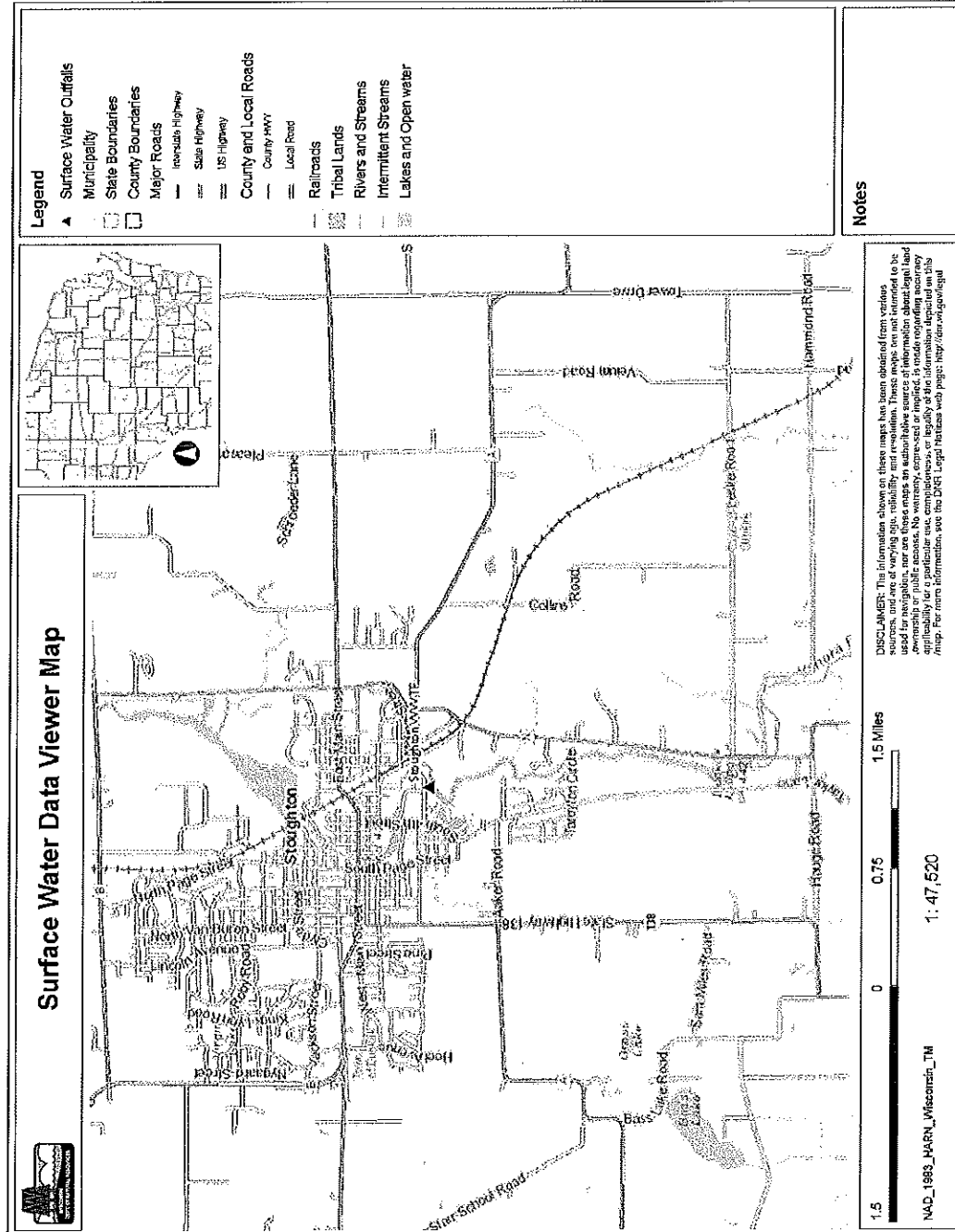
Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

Facility:	Stoughton	Data Range	7-Q ₁₀	21 cfs
Outfall(s):	001	Start:	01/01/10	Dilution:
Date Prepared:	22-Apr-17	End:	03/31/17	f:
Design Flow (Qe):	1.65 MGD	Stream type:	Small warm water sport or forage fish community	
Region:	SER	Qs:Qe ratio:	2.1	:1
		Calculation Needed?	YES	

Month	Water Quality Criteria			Receiving Water Flow Rate (7-Q ₁₀) (cfs)		Representative Highest Effluent Flow Rate (Qe)		Representative Highest Monthly Effluent Temperature		99th Percentile of Representative Data		Calculated Effluent Limits	
	Ta (default) (°F)	Sub-Lethal WQC (°F)	Acute WQC (°F)			7-day Rolling Ave (Qesl) (MGD)	Daily Max Flow Rate (Qea) (MGD)	Weekly Ave (°F)	Daily Max (°F)	Weekly Ave (°F)	Daily Max* (°F)	Weekly Ave Limit (°F)	Daily Max Limit (°F)
JAN	33	49	76	97		1.331	1.543	44	46	45	48	-	120
FEB	34	50	76	79		1.252	1.460	46	52	46	52	-	120
MAR	38	52	77	76		1.588	1.798	57	57	56	60	-	120
APR	48	55	79	46		1.584	1.890	58	59	58	60	88	120
MAY	58	65	82	54		1.542	1.727	63	65	64	67	105	120
JUN	66	76	84	27		1.837	2.540	70	70	69	72	100	115
JUL	69	81	85	24		2.138	4.135	74	74	74	75	103	100
AUG	67	81	84	33		1.353	1.419	74	74	74	75	-	120
SEP	60	73	82	32		1.243	1.506	73	73	72	75	-	120
OCT	50	61	80	36		1.148	1.445	67	68	67	70	117	120
NOV	40	49	77	100		1.228	1.577	61	62	61	64	-	120
DEC	35	49	76	120		1.175	1.347	59	60	58	61	-	120

*NA - Indicates that there are greater than 100 daily maximum values, therefore 99th percentile would be a value less than the recorded daily maximum.



Notice: Pursuant to s. NR 217.18, Wis. Adm. Code, this form must be completed and submitted to the Department at the time of the reissuance of an existing WPDES (Wisconsin pollutant discharge elimination system) permit to request adaptive management for phosphorus water quality based effluent limits (WQBEL). Failure to provide all requested information may result in denial of your request. Personal information collected will be used for administrative purposes and may be provided to requestors to the extent required by Wisconsin Open Records law [ss. 19.31-19.39, Wis. Stats.].

Type of Request:

- ☒ This is the formal adaptive management request as required in s. NR 217.18(2)
☐ This is a preliminary adaptive management request (to be submitted as part of facility planning.)

Facility and Permit Information			
Facility Name Stoughton Utilities Wastewater Treatment Plant		WPDES Permit No. WI - 0020338-08	
Facility Address 700 Mandt Parkway	City Stoughton	State WI	ZIP Code 53589
Receiving Water Yahara River			

Owner Contact Information			
Last Name Kardasz	First Name Robert	MI P	Phone No. (incl. area code) 608-877-7423
Street Address 600 South Fourth Street		FAX Number 608-873-4878	
City Stoughton	State WI	ZIP Code 53589	Email address rkardasz@stoughtonutilities.com

Facility Information			
Provide listed information for each lagoon or pond basin			
Required for AM Request	Wis. Administrative Code Reference	Conclusion	Evidence/Source of Information (attach as needed)
1. NPS contribute at least 50% of total P contribution	s. NR 217.18(2)(b)	<input checked="" type="checkbox"/> NPS contributes at least 50% <input type="checkbox"/> NPS DOES NOT contribute at least 50%	Rock River Basin TMDL Report
2. WQBEL Requires Filtration	s. NR 217.18(2)(c)	<input checked="" type="checkbox"/> Filtration required <input type="checkbox"/> Filtration NOT required	See Attachment A (limits <0.4 mg/L)
3. AM Plan	s. NR 217.18(2)(d)	<input type="checkbox"/> Plan is Included – Page 3 <input checked="" type="checkbox"/> Plan is NOT Included For a preliminary adaptive management request, AM plan not required	Please refer to the Yahara WINS AM Plan, of which Stoughton is a part.

Facility Operation and Performance

1. **Current P removal capability** – If the facility is currently required by a WPDES permit to monitor effluent phosphorus (P) provide a summary of the Influent and effluent annual average P concentrations for each of the past three (3) years. If permit required P data is not available, the applicant should provide any other P data that may be applicable and available. If no data is available, the Department may estimate the P effluent concentration by based on data from other similar facilities.

Year	Average TP, mg/L	
	Influent	Effluent
2012	6.0	0.56
2013	6.5	0.59
2014	5.6	0.51

**Watershed Adaptive Management
Request**

Form 3200-139 (1/12)

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2. **Facility Operation** – Provide a summary description of overall facility operation. If not a continuously discharging facility, describe storage procedures and the time periods when effluent discharge occurs.

See Attachment B.

3. **Previous Studies** – Reference or attach any facility planning or evaluation study that evaluated facility performance capabilities (Note – Only include studies that are recent, within 5 years, or otherwise applicable for the evaluation of the existing facility and current conditions).

See Attachment C.

Adaptive Management Plan (s) NR 217.18(d))

This section should summarize the Adaptive Management Plan for internal and external review. A complete Adaptive Management Plan should be attached. Note: If this is a preliminary adaptive management request, this section is not required.

Watershed

Yahara River

Percent Contribution of Applicant Discharge

*

Action Area (Include map)

*

Watershed Characteristics and Timeline Justification

*

Key Proposed Actions

*

Key Goals and Measures for Determining Effectiveness

*See Madison MSD's Yahara WINS Adaptive Management Plan submitted under separate cover and incorporated herein by reference.

Partner(s)

Madison MSD and other Yahara WINS partners

**Watershed Adaptive Management
Request**

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Funding Sources

Yahara WINs and its funding partners

Adaptive Management Request and Certification

Based on the information provided, I am requesting the Watershed Adaptive Management option to achieve compliance with phosphorus water quality standards in accordance with s. NR 217.19, Wis. Adm. Code.

I certify that the information provided with this request is true, accurate and complete to the best of my knowledge.

Print or type name of person submitting request*

Robert P. Kardasz

Title

Utilities Director

Signature of Official

Robert P. Kardasz

Date Signed

JUNE 15, 2016

*Must be an Authorized Representative for the treatment facility



Strand Associates, Inc.[®]
910 West Wingra Drive
Madison, WI 53715
(P) 608-251-4843
(F) 608-251-8655

June 7, 2017

Ms. Amy Garbe
Wisconsin Department of Natural Resources
141 Northwest Barstow Street, Room 108
Waukesha, WI 53188

Re: WPDES Permit Number 0020338-09-0 Mercury Pollutant Minimization Program (PMP) Plan

Dear Ms. Garbe:

1. Background

This PMP has been developed to reduce the level of mercury discharged from the Stoughton Wastewater Treatment Plant (WWTP) to a level closer to or below the proposed water quality based effluent limit of 1.3 nanograms per liter (ng/L). Achieving this level is unlikely without the construction of new treatment systems. Stoughton Utilities (SU) has applied for a variance from the 1.3 ng/L mercury limit for the next term of the facility's Wisconsin Pollutant Discharge Elimination System (WPDES) permit. The PMP is a requirement of the variance.

SU developed a PMP in 2009 as a requirement of the Stoughton WWTP WPDES permit. The variance limit for mercury in the permit dated August 1, 2014, is 3.3 ng/L. Annual reports have been submitted to the Wisconsin Department of Natural Resources (WDNR) to show progress in the minimization program. Forms used to submit annual reports are included in Attachment A.

The WDNR is currently in the process of revoking and reissuing the WPDES permit for the Stoughton WWTP to incorporate the selected phosphorus compliance option. Total recoverable mercury data collected since 2012 indicates a statistical 1-day p99 of 3.86 ng/L. Since the 2014 permit will not remain in effect for the full five years, we believe continuing the variance mercury limit of 3.3 ng/L would be reasonable.

2. Influent and Effluent Mercury Concentrations in Wastewater

According to the United States Environmental Protection Agency (USEPA), the typical influent mercury concentrations at publically owned treatment works are in the 50 to 200 ng/L range. The Stoughton WWTP typically experiences concentrations near the lower end of this window. Since 2010, the highest influent mercury concentration was 950 ng/L in December 2010. This is over twice the concentration of the second highest measured concentration of 450 ng/L in June 2011, and appears to be an outlier. There were six influent samples with a mercury concentration above 100 ng/L; one sample from each of the six years of data were above this value. These annual spikes in concentration have a significant effect on the average mercury concentrations. The average and median concentrations in the wastewater from the City of Stoughton (City) were 113 ng/L and 51 ng/L, respectively.

The highest effluent mercury value since 2010 was 3.5 ng/L in March 2013. The average effluent mercury concentration since 2010 was 1.7 and the median concentration was 1.6. These effluent mercury levels are consistently low, however are typically higher than the water quality based effluent limit of 1.3 ng/L. There were eight samples since 2010 where the effluent mercury level was below the 1.3 ng/L limit. Of those eight samples, only two were below 1.0 ng/L.

Table B-1 includes influent and effluent mercury concentrations from quarterly samples along with the corresponding daily flow measurement and is located in Attachment B. Figure B-1 plots both influent

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mercury concentration and daily flow relative to time. It should be noted that there was not any available flow data for the sample collected in December 2011, so an average daily flow of 1.21 million gallons per day (mgd) was used for plotting purposes. This data does not show a strong correlation between mercury and daily flow. The previous PMP appears to have had some benefit, as the annual spike observed in concentration has been lowered after 2011. These high values early in data collection contribute to a noticeable downward trending “best fit” line. This is more noticeable in the annual average influent mercury concentration graph, Figure B-2. The annual average suggests that the initial efforts of the PMP lowered a significant amount of influent mercury concentration. After the initial effect of the effort, the downward trend is less significant.

The effluent data has been more stable throughout the duration of data collection, with values typically consistent between 1 ng/L and 3 ng/L. Figure B-3 shows the effluent mercury concentration relative to daily flow measurement. The downward trend in the effluent data is so small that a trend is not determined to be significant. The slight downward trend may be attributed to the reduction of legacy mercury within the sewers. The insignificant decrease in effluent concentrations suggests that new treatment systems may be the only timely way to experience a significant reduction. This would be an overwhelming financial responsibility for the City. Legacy mercury in sewers will continue to decrease; however, at a slow rate.

Mercury concentrations in the biosolids (sludge) produced at the WWTP are analyzed once per year. The results from samples dating back to 2004 are shown in Table B-2 and Figure B-4. Since the development of the PMP in 2009, an obvious drop in biosolids metal quality has been observed. Since 2012, there have been two years where the sludge concentration was less than the limit of detection. These are shown as half of the limit of detection, or 0.7 milligrams per kilogram (mg/kg) in Figure B-4. The USEPA and WDNR criteria for mercury concentration in biosolids include a “ceiling” concentration of 57 mg/kg and an “exceptional quality” concentration of 17 mg/kg. The biosolids samples analyzed from the Stoughton WWTP have a maximum concentration of 5.3 mg/kg in April 2006. After 2011, the typical concentration is near 1 mg/kg; significantly lower than the “exceptional quality” standard. These low concentrations of mercury in the biosolids are further evidence of lower levels of mercury in the influent wastewater.

3. Identification of Sources of Mercury

As described above and as shown in the attached figures, the concentrations of mercury in the wastewater contributed to the Stoughton WWTP are typically very low.

There are currently five medical facilities identified in the wastewater service area: Stoughton Hospital, Dean Clinic, UW Health, Stoughton Vet, and Meriter Clinic. The medical facilities have been contacted by SU regarding best management practice (BMP) programs for disposal of mercury wastes. All facilities have implemented all recommended wastewater BMPs. The City plans to update BMP forms in 2017, and schedule site visits or an inspection every year to identify compliance with the updated BMPs.

There are currently four dental facilities identified in the wastewater service area: Lifetime Family Dentistry, John Wiencek, Adriana Jarmillo, and Thor Anderson. The four dental clinics have been inspected by SU annually. All dentists have been documented using amalgam separators. Annual follow-up will include documentation of separator maintenance. An annual letter is also planned to facilitate awareness and upkeep of BMPs.

There are two upper level school facilities in the wastewater service area: Stoughton High School and River Bluff Middle School. These schools are potential sources of mercury from chemistry laboratories or from the nurse’s office. The two schools have been contacted and inspected by SU regarding disposal of mercury wastes and implementation of all recommended BMPs. An inspection is planned for each of the schools every other year to assure continued compliance with all recommended BMPs.

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There are three elementary school facilities in the wastewater service area: Fox Prairie Elementary School, Kegonsa Elementary School, and Sandhill Elementary School. These schools may also be potential sources of mercury from the nurse's office. The elementary schools have not been contacted by SU regarding disposal of mercury wastes and implementation of all recommended BMPs. SU will begin an outreach program and inspection of the elementary schools in the second year of the reissued WPDES permit term.

There are four industries identified in the wastewater service area: Stoughton WWTP, Stoughton Trailers, Color-Con, and Uniroyal. BMP forms were sent by SU to all industries to have them go through the outreach forms to see if anything has changed. A blank outreach form is included in Attachment C. A site visit is planned to be scheduled every other year throughout the duration of the WPDES permit to assure continued compliance with recommended BMPs.

There are several senior citizen centers in the wastewater service area. The two largest centers are Skaalen Nursing and Rehabilitation Center and Nazareth Health and Rehabilitation Center. These communities may be potential sources of mercury from products used in the nurse's office. SU will begin an outreach program and inspection of the two largest senior citizen centers beginning the second year of the reissued WPDES permit term.

There may be a few other customers in the wastewater service area that are potential sources of mercury, including heating, ventilation, and air conditioning (HVAC) wholesalers, automotive repair shops, and metal scrap yards. A survey of customers as potential mercury sources is planned to be expanded, with a follow-up of implementation of BMPs to be scheduled annually. An example survey is included with this letter in Attachment C. These sources will be included in the ensuing annual PMP reports following the issuance of the reissued WPDES permit.

A sampling plan will be implemented the first year of this permit by SU to try to identify sewers that contribute to mercury at the plant. During the first year, SU will collect samples each quarter from the influent at the WWTP and at each of the three main interceptors coming into the plant. If one interceptor has a higher concentration compared to the other two, SU will go into the tributary areas of that interceptor the following year and collect samples from main trunk lines in attempt to further pinpoint the source of mercury contributing to the WWTP. This will help identify if one of the business parks, schools, industries, or other area mentioned above may be a key source of mercury. This approach may also identify a sewer that contains legacy mercury. SU will rehabilitate a sewer containing high amounts of legacy mercury by cured in place pipe (CIPP) lining prior to the expiration of the reissued WPDES permit.

It seems most likely that the occasional increase in mercury concentration is due to legacy mercury in the sewer system or improper disposal of mercury wastes such as fluorescent light bulbs. SU will continue outreach programs to facilitate awareness; and inform customers about the clean sweep disposal and recycling program.

4. Categories of Mercury Sources

The largest sources of mercury in municipal wastewater are expected to be from industrial processes and from dental facilities. There are only four industries and four dental facilities in the wastewater service area, all of which have implemented all recommended BMPs. Each of the dental facilities uses amalgam separators.

Another potential category of mercury source is laboratories at schools and medical facilities. As part of previous PMP efforts, all schools and medical facilities indicated programs are in place for proper disposal of mercury wastes.

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Other commercial customers in the wastewater service area contributing mercury may include HVAC wholesalers, automotive repair shops, and metal scrap yards. Other contributors may be identified as a potential mercury source following a survey distributed to all commercial customers in the service area.

Another category of mercury sources is the improper disposal of mercury wastes. This category is only amenable to source control to the extent of public education and public access to facilities to dispose of mercury wastes in a proper manner.

SU plans to continue and expand upon the steps taken in previous PMPs as follows:

- a. Update the SU BMP forms for medical facilities. Visit all medical facilities in the wastewater service area regarding programs in place for disposal of mercury waste and spill management annually.
- b. Survey all dental facilities in the wastewater service area regarding disposal of mercury wastes and programs in place for disposal of mercury wastes every two years. The survey will include a request for documentation regarding maintenance performed on amalgam separators.
- c. Survey all schools in the wastewater service area regarding programs in place for disposal of mercury waste, spill management, and mercury elimination efforts every two years.
- d. Survey all industrial contributors regarding proper disposal of mercury waste and spill management every other year.
- e. Identify potential additional mercury contributors through a distributed survey to all commercial facilities in the wastewater service area.
- f. Survey newly identified mercury contributors for implementation of BMPs every other year.
- g. Monthly checks with Johns Disposal and weekly checks with Waste Management to facilitate identification of mercury contributors.
- h. Publish a Public Notice in the local newspaper, twice per year, regarding the hazards of mercury, proper disposal of products containing mercury, and spill management. The Public Notice will emphasize the types of products that may contain mercury and therefore require proper disposal. Examples of these products include fluorescent tubes and bulbs, button batteries from watches and hearing aids, chemistry sets, older thermometers and temperature switches, and older toys and games.
- i. Publicize county clean sweep events through the local newspaper. The clean sweep notice will emphasize the types of products that may contain mercury and therefore require proper disposal.

5. Documentation of Source Control and Outcomes

SU will continue to document the effectiveness of the PMP efforts with respect to mercury. Quarterly sampling and testing of influent and effluent wastewater will be continued. Graphs will be prepared annually to evaluate trends in influent and effluent mercury concentrations. Annual testing of mercury concentration in biosolids will also continue.

An annual PMP status report will also be prepared and submitted to the WDNR. The annual status report will include a list of the potential mercury sources, a summary of actions taken as part of the PMP, and the wastewater influent, effluent, and biosolids mercury monitoring results.

6. Maintenance of Effluent Quality for Mercury

Maintenance of effluent quality for mercury will be facilitated by:

- a. Repeated contacts with customers that represent potential sources of mercury to confirm that BMPs have been implanted and remain in place.

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- b. Repeated public education through publication of newspaper notices and publicity of county clean sweep events.
- c. Continued operation of the WWTP to optimize treatment for conventional pollutants, which will help optimize mercury removal.

Please contact Jane Carlson or Ryan Yentz with any questions or comments regarding this PMP plan by phone at 608-251-4843 or by e-mail at Jane.Carlson@strand.com or Ryan.Yentz@strand.com.

Sincerely,

STRAND ASSOCIATES, INC.®



Jane Carlson, P.E., ENV SP
Senior Associate



Ryan M. Yentz

Enclosures

c/enc.: Brian G. Erickson, Stoughton Utilities Wastewater System Supervisor
Robert P. Kardasz, P.E., Stoughton Utilities Director

FORM 1: Mercury PMP Report Cover Sheet

WPDES Permit Holder or Sewer Authority Name: Stoughton Wastewater Utility

Initial Plan: X Annual Report _____ and Date Initial Plan Submitted _____

Report Date: _____ Period Covered by This Report: _____

<u>Name of Treatment Plant(s)</u>	<u>WPDES Permit Number</u>	<u>Mercury Effluent Limit (ng/l)</u>
<u>Stoughton WWTP</u>	<u>WI-0020338-08-0</u>	<u>3.3</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

Person to contact concerning information contained in this report:

Name: Brian Erickson

Title: Wastewater System Supervisor

Mailing Address: 600 S. Fourth St

City, State, Zip Code: Stoughton, WI 53589

Telephone No. 608-877-7421

E-mail: berickson@stoughtonutilities.com

I have personally examined and am familiar with the information submitted in this document and attachments. Based upon my inquiry of the individuals immediately responsible for obtaining the information reported herein, I believe that the submitted information is true, accurate and complete.

_____	<u>Wastewater System Supervisor</u>
Date	Title of Official
<u>Brian Erickson</u>	_____
Name of Official	Signature of Official

FORM 2: Mercury PMP Summary of Resources

1. Person(s) implementing PMP	Title
-------------------------------	-------

Brian Erickson	Wastewater System Supervisor
----------------	------------------------------

2. Total Person-Hours ¹

Total Cost ²

3. Are there any anticipated changes in treatment plant resources that would significantly change program hours or costs during the subsequent year, such as involving or hiring more personnel, purchasing equipment to implement the pollutant minimization program, or conducting compliance monitoring?

Yes X No If yes, explain:

4. Collaboration on mercury reduction activities is encouraged. Did any other municipal departments, county agencies, non-profit organizations, or other municipalities help implement part of your mercury reduction program?

Yes x No If yes, explain:

5. A program for collecting mercury from the permittee's sewer system users is required. List all available options for recycling mercury including household hazardous waste centers, clean sweep events, and collection events hosted by the POTW.

<u>Recycling Option</u>	<u>Frequency of Availability</u>
<u>Clean Sweep</u>	<u>Monthly</u>
<u>Waste Management</u>	<u>Weekly</u>
Johns Disposal	Weekly

¹ Include time of all staff involved in administering and implementing the various program areas, e.g. Pretreatment Coordinator, Superintendent of POTW, Clerical Staff, Field Monitoring Personnel, Laboratory Personnel, and others.

² Include all administrative, monitoring, laboratory staff, and equipment costs including monitoring/analytical work done by an outside laboratory.

FORM 3: Mercury PMP Summary of Treatment Plant Analytical Mercury Data

Influent		Effluent		Biosolids	
Date	Concentration ng/L	Date	Concentration ng/L	Date	Concentration mg/kg
	No Data	4-17-08	2.9	7-29-09	2.1
		5-1-08	1.9	3-13-09	1.4
		5-14-08	1.7	5-07-08	3.4
		5-29-08	42	9-17-08	2.9
		6-25-08	1.4	10-04-07	4.0
		7-8-08	1.1	4-11-07	2.2
		7-12-08	1.9	10-04-06	2.9
		7-21-08	1.1	4-17-06	5.3
		8-25-08	1.6		
		9-16-08	0.8		
		10-16-08	1.4		
		11-5-08	1.5		
Average	N/D	Average	1.572	Average	3.025
Test Method		Test Method	EPA1631E	Test Method	EPA 245.5
Average from 1 year ago		Average from 1 year ago		Average from 1 year ago	
Average from 2 years ago		Average from 2 years ago		Average from 2 years ago	
Average from 3 years ago		Average from 3 years ago		Average from 3 years ago	
Laboratory doing the wastewater analysis:			Northern Lake Service, Inc		
Laboratory doing the biosolids analysis:			Test America		

Is there a numerical or narrative mercury limit in your sewer use ordinance? NO

If yes, what is it? _____

FORM 4A: Medical Facility Inventory¹

Name	Address	City, State, Zip Code	Type of Facility	Contact	Phone

¹ List should include all hospitals, clinics and veterinary facilities with diagnostic laboratories (including laboratories contracted or managed independently of the medical facility).

FORM 4B: Medical Facility Mercury Checklist

Best Management Practices for Mercury are taken from the AHA/EPA “Making Medicine Mercury-Free” Criteria.

Compliance with these BMPs may be considered as compliance with the local sewer use ordinance limit for mercury; wastewater sampling and analysis may also be waived by the municipality. It is the intention of the Mercury Pollutant Minimization Program to encourage implementation of mercury BMPs. Report date BMP implemented, or if not implemented, date anticipated.

	Yes	No	Date	Best Management Practice
Policy				1. Has your facility established a mercury plan and timeline for the reduction and eventual elimination of mercury-containing equipment and chemicals?
				2. Has your facility implemented an Environmentally Preferable Purchasing (EPP) policy for mercury products and a process to regularly review mercury use reduction and elimination progress?
				3. Has your facility established mercury management protocols for safe handling, mercury spill clean up procedures, disposal procedures, and education and training of employees?
Mercury Products				4. Has your facility replaced patient mercury thermometers?
				5. Has your facility replaced all or majority (75%) of mercury sphygmomanometers?
				6. Has your facility replaced all or majority (75%) of mercury clinical devices (bougies, miller-abbott tubes, dilators, etc)?
				7. Has your facility inventoried and labeled all mercury-containing facility devices (switches, thermostats, etc.)? **
				8. Has your facility implemented a program to recycle fluorescent lamps? **
				9. Has your facility implemented battery collection programs? **
Lab				10. Has your facility replaced all or majority (75%) of mercury lab thermometers?
				11. Has your facility replaced B5/Zenkers stains with non-mercury substitute?
				12. Has your facility inventoried mercury-containing lab chemicals?

** May not affect wastewater

Wastewater Sampling and Analysis (Not required for facilities implementing or scheduled to implement all BMPs)

Sampling Location _____ Mercury Effluent Concentration _____ Date _____

(Attach summary if multiple wastewater outfalls)

I have personally examined and am familiar with the information submitted in this document and attachments. Based upon my inquiry of the individuals immediately responsible for obtaining the information reported herein, I believe that the submitted information is true, accurate and complete.

Name of Facility	Address	Size of Facility (Number of beds, employees, or other)	
Printed Name of Official	Signature	Title	<div style="display: flex; justify-content: space-between;"> Phone Date </div>

FORM 4C: Medical Facility Compliance and Outreach Summary

General Outreach to All Medical Facilities

Outreach Accomplished	Outreach Planned

Outreach may include newspaper articles or advertisements, mailings, workshops, speaking engagements, etc. Identify type and date.

Compliance and Specific Outreach to Individual Medical Facilities

Name of Facility	Implemented All WW BMPs	Scheduled All WW BMPs	Wastewater Analysis	Outreach Accomplished	Outreach Planned

Outreach may include a site visit, an inspection, sampling, etc. Identify type and date.

Sector Evaluation

Notes:

- _____ % Implemented All WW BMPs

_____ % Scheduled to Implement All WW BMPs

_____ % In Compliance with Local Wastewater Limits

_____ Total % Compliant (Medical Mercury PMP Score)

Enter on Form 10 under IA: Medical Sector Score

FORM 5A: Dental Facility Inventory¹

Name	Address	City, State, Zip Code	Type of Facility	Contact	Phone

¹ List should include all dental facilities that install or remove amalgam fillings. Dental facilities not working with amalgam do not need to be included.

FORM 5B: Dental Facility Mercury Checklist

Best Management Practices are those defined by the ADA and Installation of an Amalgam Separator meeting ISO 11143 Standards.

Compliance with the ADA recommended mercury management practices plus the installation and maintenance of an amalgam separator meeting ISO 11143 standards may be considered as compliance with the local sewer use ordinance limit for mercury; wastewater sampling and analysis may also be waived by the municipality. It is the intention of the Mercury Pollutant Minimization Program to encourage implementation of mercury BMPs. Report date BMP implemented, or if not implemented, date anticipated. If you do not place or remove amalgam fillings, check here, sign and return form. _____

Yes	No	Date	Best Management Practice
			1. Has all bulk mercury been eliminated from your stock at your dental office?
			2. Does your dental office use precapsulated alloys?
			3. Does your dental office recycle disposable amalgam capsules?
			4. Does your dental office capture and recycle non-contact scrap amalgam?
			5. Does your dental office capture and recycle contact amalgam including the contents of chair-side traps?
			6. Does your dental office recycle contact amalgam retained by the vacuum pump filter?
			7. Does your dental office disinfect and recycle extracted teeth with amalgam fillings?
			8. Does your dental office use non-chlorine, non-bleach line cleaners that minimize the dissolution of amalgam?
			9. Does your dental office have and maintain an amalgam separator meeting ISO standards? Manufacturer: _____ Model: _____

Name and address of vendor where amalgam is recycled: _____

Wastewater Sampling and Analysis (Not required for facilities scheduling or implementing best management practices as defined above.)

Sampling Location _____ Mercury Effluent Concentration _____ Date _____

(Attach summary if multiple wastewater outfalls)

I have personally examined and am familiar with the information submitted in this document and attachments. Based upon my inquiry of the individuals immediately responsible for obtaining the information reported herein, I believe that the submitted information is true, accurate and complete.

Name of Facility	Address	Size of Facility (Number of chairs, employees, or other)	
Printed Name of Official	Signature	Title	Phone
			Date

FORM 5C: Dental Facility Compliance and Outreach Summary

General Outreach to All Dental Facilities

Outreach Accomplished	Outreach Planned

Outreach may include newspaper articles or advertisements, mailings, workshops, speaking engagements, etc. Identify type and date.

Compliance and Specific Outreach for Individual Dental Facilities

Name of Facility	Implemented All BMPs	Scheduled All BMPs	Wastewater Analysis	Outreach Accomplished	Outreach Planned

Outreach may include a site visit, an inspection, sampling, etc. Identify type and date.

Sector Evaluation

Notes:

<div style="margin-bottom: 5px;">_____ % Implemented All BMPs</div> <div style="margin-bottom: 5px;">_____ % Scheduled to Implement All BMPs</div> <div style="margin-bottom: 5px;">_____ % In Compliance with Local Wastewater Limits</div> <div style="margin-bottom: 5px;">_____ Total % Compliant (Dental Mercury PMP Score)</div> <div style="text-align: center; margin-top: 20px;"> <i>Enter on Form 10 under IB: Dental Sector Score</i> </div>
--

FORM 6A: School and Educational Facility Inventory¹

Name	Address	City, State, Zip Code	Type of Facility	Contact	Phone

¹ List should include all middle schools, high schools, technical schools, colleges, and universities.

FORM 6B: School Mercury Checklist

Best Management Practices for Mercury are taken from the WDNR's "Green and Healthy Schools" Criteria.

Compliance with these BMPs may be considered as compliance with the local sewer use ordinance limit for mercury; wastewater sampling and analysis may also be waived by the municipality. It is the intention of the Mercury Pollutant Minimization Program to encourage implementation of mercury BMPs. Report date BMP implemented, or if not implemented, date anticipated.

	Yes	No	Date	Best Management Practice
Policy				1. Has your school completed a mercury products inventory for the entire school?
				2. Does your school have an action plan in place to eliminate mercury-containing items that were found as a result of the inventory?
Mercury Products				3. Has all elemental mercury been eliminated from classrooms at your school?
				4. Have all mercury compounds been eliminated from classrooms and storerooms?
				5. Have all mercury lab thermometers been eliminated from the classrooms?
				6. Have all mercury lab barometers been eliminated from the classrooms?
				7. Have all mercury fever thermometers been eliminated from the nurse's office?
				8. Have all mercury blood-pressure cuffs been eliminated from the nurse's office?
				9. Are all mercury-containing items being stored in airtight, unbreakable containers?
				10. Has the danger of a mercury spill been mitigated by having a mercury spill kit and trained staffed to use the kit?
Optional				11. If your school has completed any of these activities, check below: <div style="display: flex; justify-content: space-between;"> <div> ____ Classroom presentations on mercury ____ Recycling of fluorescent bulbs </div> <div> ____ Phase-out of mercury thermostats ____ Recycling of mercury batteries </div> </div>

Wastewater Sampling and Analysis (Not required for facilities implementing or scheduled to implement all BMPs)

Sampling Location _____ Mercury Effluent Concentration _____ Date _____

(Attach summary if multiple wastewater outfalls)

I have personally examined and am familiar with the information submitted in this document and attachments. Based upon my inquiry of the individuals immediately responsible for obtaining the information reported herein, I believe that the submitted information is true, accurate and complete.

Name of Facility	Address	Size of Facility (Number of students, employees, or other)	
Printed Name of Official	Signature	Title	Phone _____ Date _____

FORM 6C: School and Educational Facility Compliance and Outreach Summary

General Outreach to All School and Educational Facilities

Outreach Accomplished	Outreach Planned

Outreach may include newspaper articles or advertisements, mailings, workshops, speaking engagements, etc. Identify type and date.

Compliance and Specific Outreach for Individual School and Educational Facilities

Name of Facility	Implemented All BMPs	Scheduled All BMPs	Wastewater Analysis	Outreach Accomplished	Outreach Planned

Outreach may include a site visit, an inspection, sampling, etc. Identify type and date.

Sector Evaluation

Notes:

_____	% Implemented All BMPs
_____	% Scheduled to Implement All BMPs
_____	% In Compliance with Local Wastewater Limits
_____	Total % Compliant (School Mercury PMP Score)
<i>Enter on Form 10 under IC: School Sector Score</i>	

FORM 7A: Industry Inventory¹

Name	Address	City, State, Zip Code	Type of Facility	Contact	Phone

¹ List should include all industries and businesses identified by the POTW as having potential for mercury wastewater contributions (see instructions).

FORM 7B: Industry Mercury Checklist

Best Management Practices for Mercury are Defined as Listed Below

Compliance with these BMPs may be considered as compliance with the local sewer use ordinance limit for mercury; wastewater sampling and analysis may also be waived by the municipality. It is the intention of the Mercury Pollutant Minimization Program to encourage implementation of mercury BMPs. Report date BMP implemented, or if not implemented, date anticipated.

	Yes	No	Date	Best Management Practice
Policy				1. Has your facility established a mercury policy statement that includes the reduction or virtual elimination of mercury?
				2. Has your facility developed a plan to phase-out mercury-containing devices?
				3. Has your facility implemented a chemical management program that includes pre-purchase review and approval?
				4. Has your facility established mercury management protocols for safe handling, mercury spill clean up procedures, disposal procedures, and education and training of employees about these protocols?
Devices				5. Has your facility inventoried all mercury-containing devices (such as switches, thermostats, etc)? **
				6. Has your facility labeled mercury-containing devices to recycle at the end of life? **
				7. Has your facility implemented a program to recycle fluorescent lamps? * *
				8. Does your facility properly recover and recycle elemental mercury and mercury-containing products? **
Chemicals				9. Has your facility requested certificates of analysis for bulk chemicals known to have potential mercury contamination?
				10. Has your facility reduced the use of mercury-containing chemicals as much as feasible?
				11. If applicable, has your facility inventoried mercury-containing lab chemicals, thermometers and other devices with a plan for non-mercury product substitution?

** May not effect wastewater

Wastewater Sampling and Analysis (Not required for facilities implementing or scheduled to implement all BMPs.)

Sampling Location _____ Mercury Effluent Concentration _____ Date _____

(Attach summary if multiple wastewater outfalls)

I have personally examined and am familiar with the information submitted in this document and attachments. Based upon my inquiry of the individuals immediately responsible for obtaining the information reported herein, I believe that the submitted information is true, accurate and complete.

Name of Facility	Address	Phone
Printed Name of Official	Signature	Title
		Date

FORM 7C: Industry Compliance and Outreach Summary

General Outreach to All Industrial Facilities

Outreach Accomplished	Outreach Planned

Outreach may include newspaper articles or advertisements, mailings, workshops, speaking engagements, etc. Identify type and date.

Compliance and Specific Outreach for Individual Industrial Facilities

Name of Facility	Implemented All WW BMPs	Scheduled All WW BMPs	Wastewater Analysis	Outreach Accomplished	Outreach Planned

Outreach may include a site visit, an inspection, sampling, etc. Identify type and date. Add additional pages as necessary.

Sector Evaluation

Notes:

_____	% Implemented All WW BMPs
_____	% Scheduled to Implement All WW BMPs
_____	In Compliance with Local Wastewater Limits
_____	Total % Compliant (Industry Mercury PMP Score)
<i>Enter on Form 10 under ID: Industry Sector Score</i>	

Form 8A: General Public Mercury Checklist and Outreach Summary

Best Management Practices for mercury are defined as reducing household use of new mercury-containing products and recycling (rather than discarding) old mercury-containing products.

List participation by households in reducing their use of new mercury containing products (i.e.: retail stores that no longer sell mercury fever thermometers) and participation by households in recycling their old mercury-containing products (i.e.: “CleanSweep” events for mercury thermometers). Include adoption of local ordinances that affect mercury product sale or recycling. *Note: Common household mercury products include fever and other thermometers, thermostats, “silent” light switches, and containers of liquid mercury.* Attach additional sheets as necessary.

Household Mercury Product	Discontinued Sale (Describe)	Recycled Products (Quantity)

Outreach activities to households (and retail stores). List date accomplished. Attach additional sheets as necessary.

Activity:	Website/Ads in Paper/Displays	Mailings/Surveys	Collection Events	Workshops/Community Events	Site Visits/Personal Contacts	Other: Describe
Date						
Date						
Date						
Date						
Date						

Sector Evaluation

The score for the General Public Sector is calculated based on a formula that uses POTW size and the number of outreach events. *The maximum value for the general public sector score is 100.*

$$\frac{\text{\# of outreach events}}{\text{ }} \times \frac{\text{facility factor}}{\text{ }} = \text{General Public Mercury PMP Score}$$

Enter on Form 10 under IIA: General Public Sector Score

Facility Size (MGD)	Facility Factor
1-----4.9.....	10
5-----49.9.....	5
50----250.....	1

FORM 8B: HVAC (Thermostat) Mercury Checklist and Outreach Summary

Best Management Practices for mercury are defined as collecting and recycling mercury thermostats.

List HVAC wholesalers and contractors that collect and recycle mercury thermostats; include retail stores that offer this service. Attach additional sheets as necessary.

Name	Address	City/State Zip Code	Type of Facility

Estimated total number of HVAC wholesalers and contractors in service area: _____

Outreach activities to HVAC wholesalers and contractors. List date accomplished. Attach additional sheets as necessary.

Activity:	Website/Ads in Paper/Displays	Mailings/Surveys	Collection Events	Workshops/ Community Events	Site Visits/ Personal Contacts	Other: Describe
Date						
Date						
Date						
Date						
Date						

Sector Evaluation

Notes:

_____ **HVAC (Thermostat) Mercury PMP Score**
(% HVAC wholesalers and contractors collecting and recycling mercury thermostats in service area).

Enter on Form 10 under IIB: HVAC Sector Score

FORM 8C: Auto Switch Mercury Checklist and Outreach Summary

Best Management Practices for mercury are defined as removing and recycling auto mercury switches.

List auto-scrap yards that remove and recycle mercury hood and trunk switches; include dealerships that perform this same service. Attach additional sheets as necessary.

Name	Address	City/State/Zip Code	Type of Facility

Estimated total number of auto scrap yards and dealerships in service area: _____

Outreach activities to auto scrap yards and dealerships. List date accomplished. Attach additional sheets as necessary.

Activity:	Website/Ads in Paper/Displays	Mailings/Surveys	Collection Events	Workshops/Community Events	Site Visits/Personal Contacts	Other: Describe
Date						
Date						
Date						
Date						
Date						

Sector Evaluation

Notes:

_____ **Auto Switch Mercury PMP Score**

(% auto scrap yards and dealerships removing and recycling mercury hood and trunk switches in service area).

Enter on Form 10 under IIC: Auto Switch Sector Score

Form 8D: Fluorescent Bulb Mercury Checklist and Outreach Summary

Best Management Practices for mercury are defined as increasing business and household use of energy-efficient low-mercury fluorescent bulbs and recycling (rather than discarding) burned out fluorescent bulbs.

List participation by businesses and households in recycling their burned out fluorescent bulbs, including both continuous and one-time “CleanSweep” events. Include adoption of local ordinances that affect fluorescent bulb recycling. Attach additional pages as necessary.

Business Fluorescent Bulb Recycling (Quantity, %, or other measures)	Household Fluorescent Bulb Recycling (Quantity, %, or other measures)

Outreach activities to businesses, households (and retail stores) promoting fluorescent bulb recycling. List date accomplished. Attach additional pages as necessary.

Activity:	Website/Ads in Paper/Displays	Mailings/Surveys	Collection Events	Workshops/ Community Events	Site Visits/ Personal Contacts	Other: Describe
Date						
Date						
Date						
Date						
Date						

Sector Evaluation

The score for the Fluorescent Bulb Sector is calculated based on a formula that uses POTW size and the number of outreach events. The maximum value for the fluorescent bulb sector score is 100.

$$\frac{\text{\# of outreach events}}{\text{facility factor}} \times \text{Facility Factor} = \text{Fluorescent Bulb Mercury PMP Score}$$

Enter on Form 10 under IID: Fluorescent Bulb Sector Score

Facility Size (MGD)	Facility Factor
1-----4.9.....	10
5----49.9.....	5
50---250.....	1

FORM 9A: Historical Mercury PMP Score

This form gives credit to your POTW for mercury reduction projects completed before implementing a Mercury PMP. The information on the form will not change from year to year. The form is divided into outreach aimed at wastewater sectors and outreach aimed at optional sectors (dairy manometer outreach refers to farms that have participated in replacing and recycling their milk house mercury manometers). For each outreach activity that your POTW has done in the past, put a check in the corresponding box. To calculate your Historical Mercury Score, count the total number of boxes checked and enter that number in the box on the bottom of the page and also on Form 10.

		OUTREACH ACTIVITIES						SECTOR ACCOMPLISHMENTS			
		Ads in Paper/ Displays/ Website	Mailings/ Surveys	Collection Events	Workshops/ Community Events	Site Visits/ Personal Contacts	Other: Describe	Replaced Mercury Products	Recycled Mercury Products	Installed Mercury Treatment	Other - Describe
Wastewater Sectors	<i>Medical</i>										
	<i>Dental</i>										
	<i>School</i>										
	<i>Industry</i>										
Other Community Sectors	<i>General Public</i>										
	<i>HVAC</i>										
	<i>Auto Switch</i>										
	<i>Fluorescent Bulb</i>	x	x								
	<i>Dairy Manometer</i>										
	<i>Other - Define</i>										

Sector Evaluation:

Notes:

<div style="display: flex; align-items: center;"> <div style="border-bottom: 1px solid black; width: 50px; margin-right: 10px;"></div> <div> Number of Mercury Outreach Activities and Mercury Sector Accomplishments: (Total boxes checked) </div> </div> <p style="margin-top: 10px;"><i>For Annual Report: Enter on Form 10 under IIIA: Historical Score</i></p>
--

FORM 9B: Extra-jurisdictional Mercury PMP Score

This form gives credit for mercury projects your POTW has completed outside the treatment plant service area. For the initial plan, include all activities you have implemented. For the annual report, include all activities that have occurred only in the past 12 months. The form is divided into outreach aimed at wastewater sectors and outreach aimed at optional sectors. For each outreach activity or sector accomplishment, put a check in the corresponding box. To calculate your Extra-jurisdictional Mercury Score, count the total number of boxes checked and enter that number in the box on the bottom of the page and also on Form 10.

		OUTREACH ACTIVITIES						SECTOR ACCOMPLISHMENTS			
		Ads in Paper/ Displays/ Website	Mailings/ Surveys	Collection Events	Workshops/ Community Events	Site Visits/ Personal Contacts	Other: Describe	Replaced Mercury Products	Recycled Mercury Products	Installed Mercury Treatment	Other - Describe
Wastewater Sectors	<i>Medical</i>										
	<i>Dental</i>										
	<i>School</i>										
	<i>Industry</i>										
Other Community Sectors	<i>General Public</i>										
	<i>HVAC</i>										
	<i>Auto Switch</i>										
	<i>Fluorescent Bulb</i>										
	<i>Dairy Manometer</i>										
	<i>Other - Define</i>										

Sector Evaluation:

Notes:

<div style="border-bottom: 1px solid black; width: 50px; display: inline-block; margin-bottom: 5px;"></div> Number of Mercury Outreach Activities and Mercury Sector Accomplishments: (Total boxes checked)
<i>For Annual Report: Enter on Form 10 under IIIB: Extra-jurisdictional Score</i>

FORM 10: Community Mercury PMP Score

Facility Name: Stoughton WWTP

Report Date: _____

I. **Wastewater Sectors:** (Should be included in Mercury PMP Plan)

<u>Sector</u>	<u>Sector Score</u>	x	<u>Weighting Factor</u> *	=	<u>Weighted Sector Score</u>
A: Medical (from Form 4C)	_____	x	_____(0.15)	=	_____
B: Dental (from Form 5C)	_____	x	_____(0.50)	=	_____
C: School (from Form 6C)	_____	x	_____(0.15)	=	_____
D: Industry (from Form 7C)	_____	x	_____(0.20)	=	_____

Total Wastewater Sectors Score

* Weighting factor is the relative fraction of mercury to POTW that is attributable to each sector. If you know what fraction comes from each sector you can adjust accordingly. The weighting factors must add up to 1. Use default values in parenthesis above if unknown.

II. **Other Community Sectors:** (May be included in Mercury PMP Plan)

<u>Sector</u>	<u>Sector Score</u>	x	<u>Weighting Factor</u> **	=	<u>Weighted Sector Score</u>
A: General Public (from Form 8A)	_____	x	0.1	=	_____
B: HVAC (from Form 8B)	_____	x	0.1	=	_____
C: Auto Switch (from Form 8C)	_____	x	0.1	=	_____
D: Fluorescent Bulb (from Form 8D)	_____	x	0.1	=	_____

Total Other Community Sectors Score

** Weighting factor is between 0.0 and 0.1. Wisconsin's weighting factor is 0.1.

III. **Other Credits:** (May be included in Mercury PMP Plan)

<u>Other</u>	<u>Score</u>	x	<u>Weighting Factor</u> **	=	<u>Weighted Score</u>
A: Historical (from Form 9A)	_____	x	0.1	=	_____
B: Extra-jurisdictional (from Form 9B)	_____	x	0.1	=	_____

Total Other PMP Credits Score

** Weighting factor is between 0.0 and 0.1. Wisconsin's weighting factor is 0.1.

IV. **Community Mercury PMP Score:**

Total Score

Sum of Wastewater Sectors, Other Community Sectors and Other PMP Credits

ATTACHMENT B
MERCURY DATA

Figure B-1

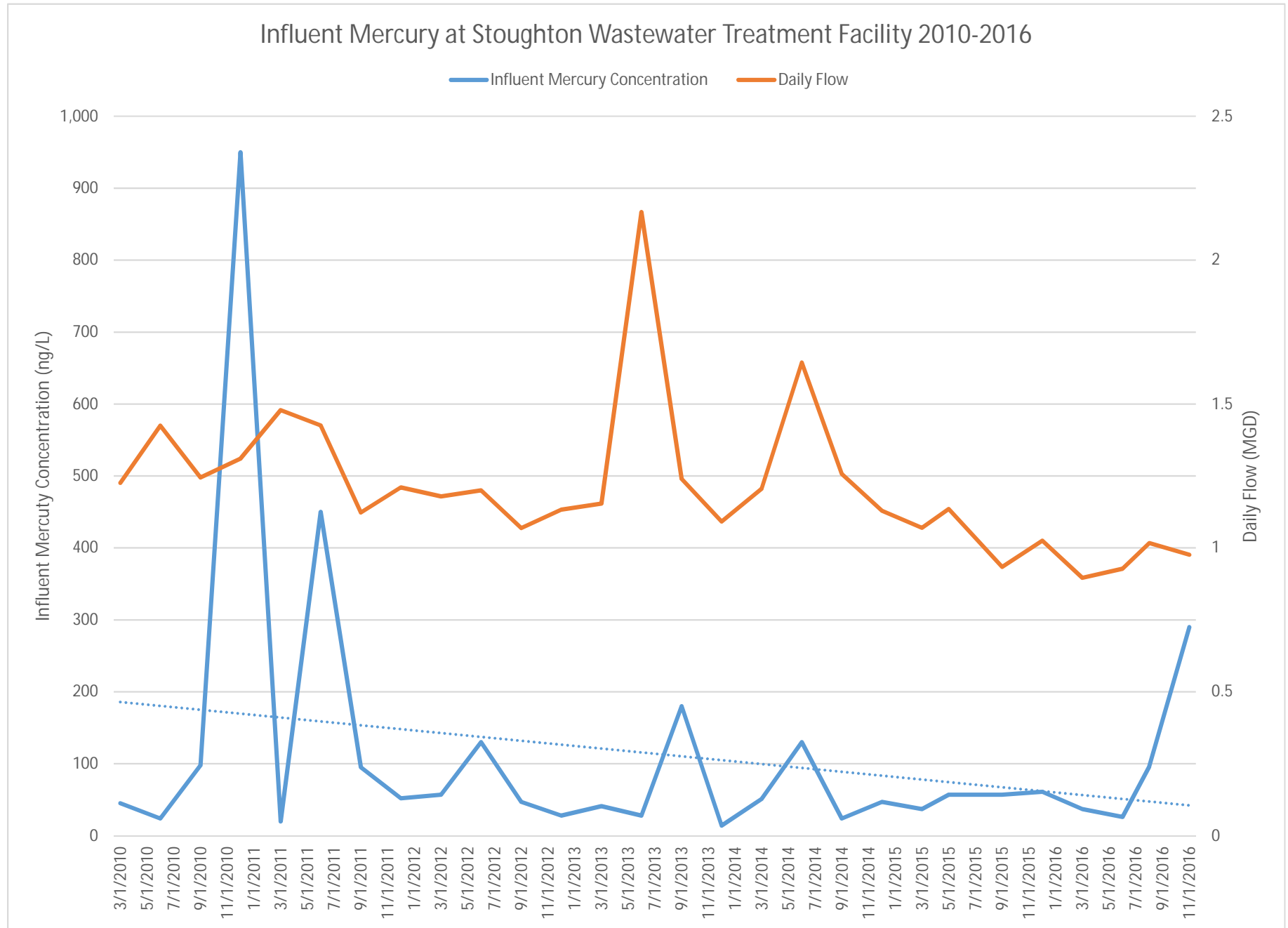


Figure B-2

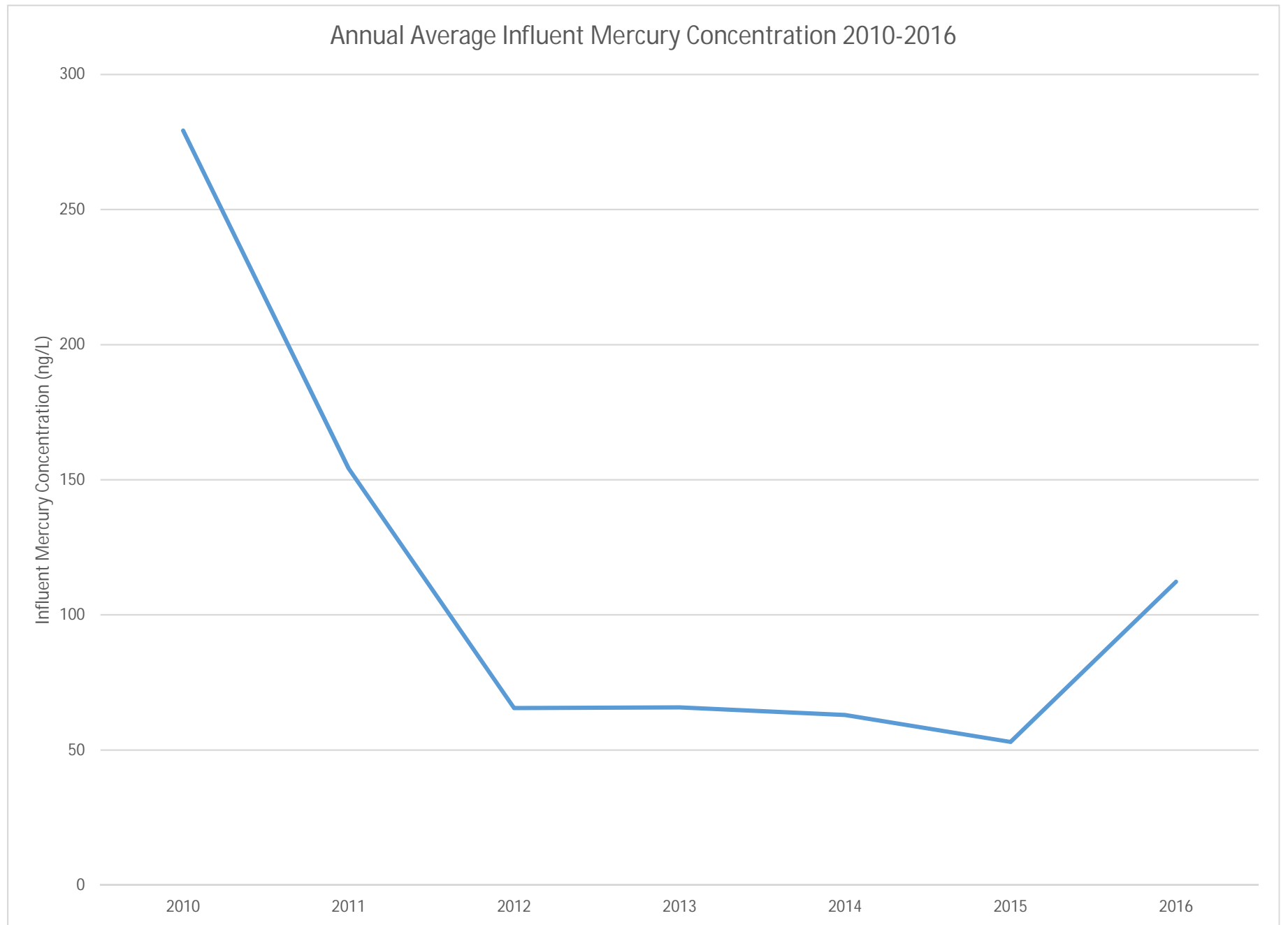


Figure B-3

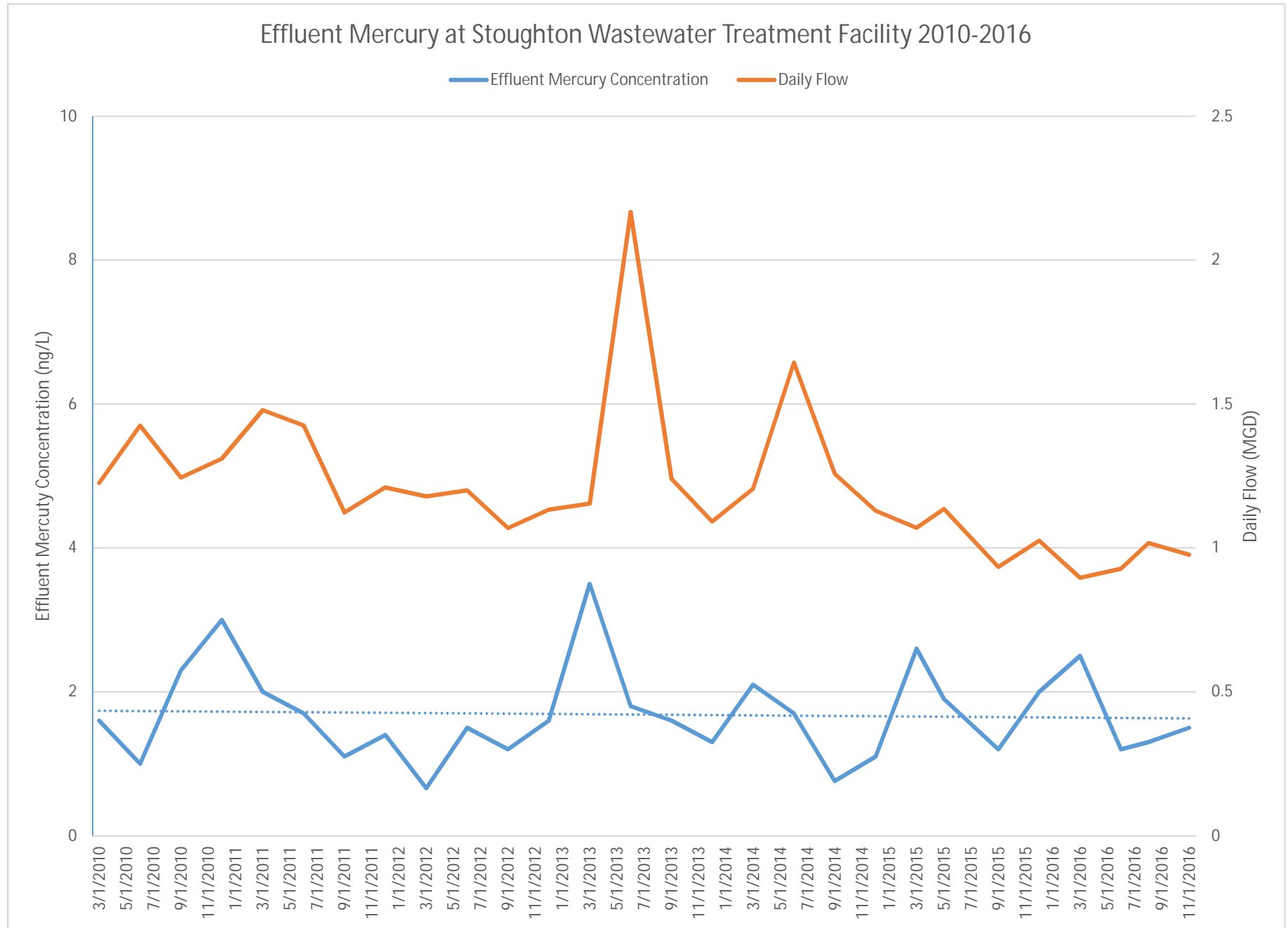


Figure B-4

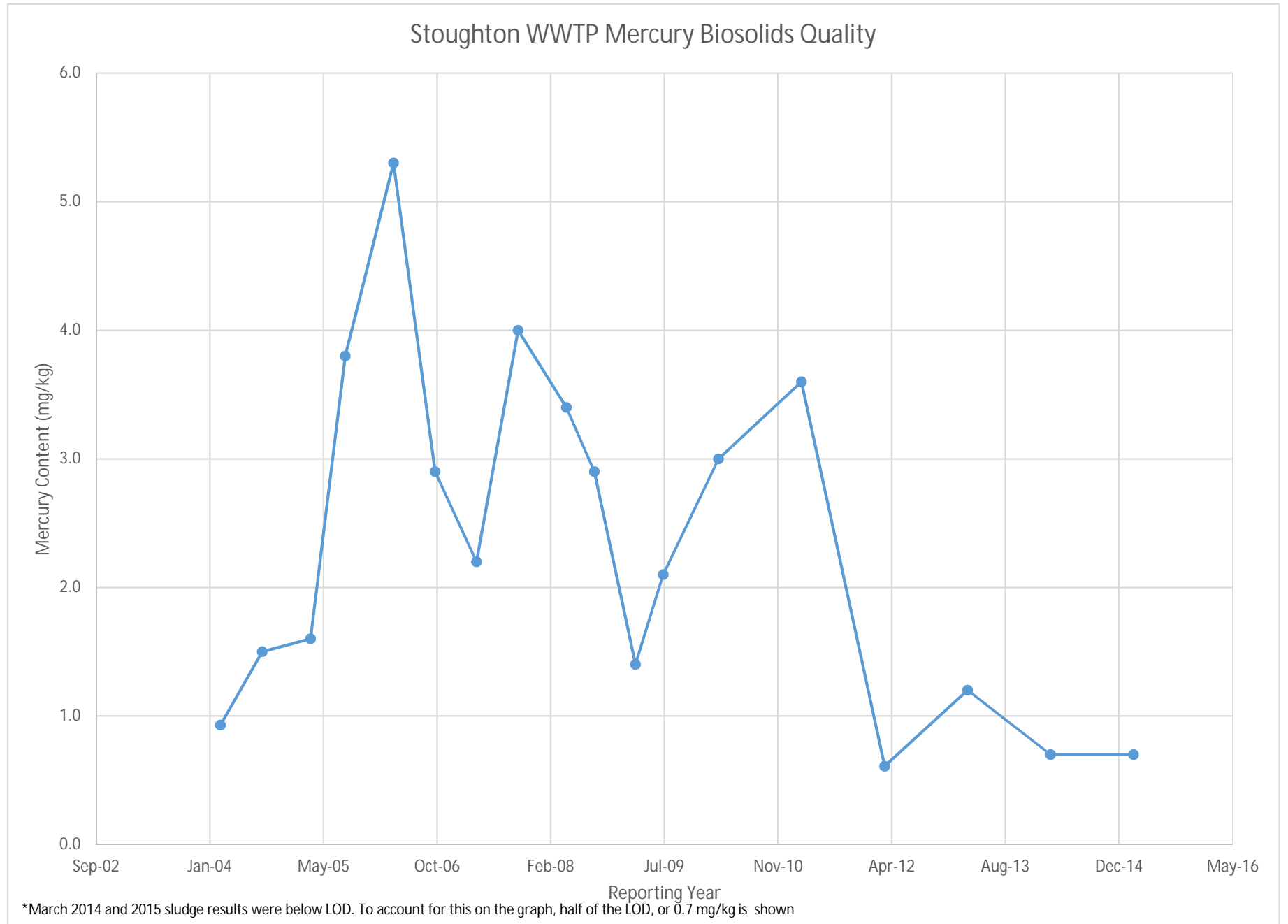


Table B-1

Quarterly Influent and Effluent Mercury Concentration Sample Results

DATE	INFLUENT (ng/L)	EFFLUENT (ng/L)	FLOW (MGD)	COMMENTS
3/26/2016	37	2.5	0.896	
6/2/2016	26	1.2	0.928	
8/31/2016	96	1.3	1.017	
4-Nov	290	1.5	0.976	
3/31/2015	37	2.6	1.07	
5/18/2015	57	1.9	1.135	
9/22/2015	57	1.2	0.934	
12/31/2015	61	2	1.025	
3/11/2014	51	2.1	1.206	
6/30/2014	130	1.7	1.644	
9/30/2014	24	0.76	1.257	
12/9/2014	47	1.1	1.129	
3/27/2013	41	3.5	1.154	
6/27/2013	28	1.8	2.167	
9/30/2013	180	1.6	1.24	
12/31/2013	14	1.3	1.092	
3/27/2012	57	0.66	1.179	
6/29/2012	130	1.5	1.2	
9/26/2012	47	1.2	1.069	
12/18/2012	28	1.6	1.133	
3/16/2011	20	2	1.479	
6/30/2011	450	1.7	1.426	
9/30/2011	95	1.1	1.123	
12/30/2011	52	1.4		No flow data, used average daily flow of 1.21 MGD for graph
3/8/2010	45	1.6	1.226	
6/28/2010	24	1	1.425	
9/14/2010	98	2.3	1.245	
12/7/2010	950	3	1.31	

Table B-2

Annual Biosolids Sludge Concentration Sample Results

Reporting Year	Sludge (mg/kg)
Mar-15	<LOD
Mar-14	<LOD
Mar-13	1.2
Mar-12	0.61
Mar-11	3.6
Mar-10	3
Jul-09	2.1
Mar-09	1.4
Sep-08	2.9
May-08	3.4
Oct-07	4
Apr-07	2.2
Oct-06	2.9
Apr-06	5.3
Sep-05	3.8
Apr-05	1.6
Sep-04	1.5
Mar-04	0.93

STOUGHTON UTILITIES WASTEWATER TREATMENT PLANT
COMMERCIAL/INSTITUTIONAL SURVEY
MERCURY SOURCE MINIMIZATION STUDY

With the next issuance of the City of Stoughton's Wisconsin Pollutant Discharge Elimination System (WPDES) permit, additional requirements for mercury control are expected. The purpose of these requirements is to lower mercury contributions to Wisconsin's rivers and lakes. In the environment, a percentage of mercury undergoes a biological/chemical process and is converted to methyl mercury, which is a more toxic form of mercury. Once mercury is introduced to the sanitary sewer system, it becomes difficult and expensive to treat at the treatment plant.

Stoughton Utilities can generally meet the current effluent mercury limit set by the Wisconsin Department of Natural Resources (WDNR) of around 3.3 ng/L. However, the new regulations may result in an effluent mercury limit as low as 1.3 ng/L. For this low limit, a costly tertiary treatment process may be required, resulting in significant increases in sewer user charges including higher surcharge rates for mercury.

As a first step to compliance, it is prudent to review the sources of mercury in the wastewater discharged to the sanitary sewer system to see if they can be minimized. Some commercial, institutional, or industrial establishments discharge mercury to the sewerage system because it is present in fluorescent tubes and bulbs, button batteries from watches and hearing aids, chemistry sets, older thermometers and temperature switches, and older toys and games. In some cases, it may be feasible for these facilities to eliminate or reduce sources if it can be done without significant cost to the facility or adverse impact on the operations. Minimizing mercury in the wastewater by disposing of these products appropriately may be much more economical than removing it using tertiary treatment at the wastewater treatment plant. The Dane County Clean Sweep Program allows for disposal of products containing mercury by appropriate methods.

The purpose of this survey is to obtain the information required to explore mercury minimization.

Please complete the form by filling in answers to the following questions, and provide a copy to Brian Erickson at Stoughton Utilities, berickson@stoughtonutilities.com or P.O. Box 383, Stoughton, WI 53589 by _____.

1. Name and Address of Business or Facility:

2. Whom should we contact for additional information?

Name: _____
Telephone No.: _____
E-mail: _____

3. Service(s) performed:

4. Mercury

- a. Do you have any products containing mercury that could result in mercury discharge to the sewer? These products may include fluorescent tubes and bulbs, button batteries from watches and hearing aids, chemistry sets, older thermometers and temperature switches, older toys and games, and so on.

Yes () No ()

- b. If yes to a. above, please provide a list of all products containing mercury.

- c. For any of the above products, are you aware of disposal methods that could prevent undesirable mercury to enter the sanitary sewer system? Please describe current disposal methods for mercury products at your facility.

Yes () No ()

Your assistance with this survey is appreciated. If you have questions, please call Jane Carlson at Strand Associates, Inc.[®], Madison, Wisconsin, 608-251-4843.

Substantial Compliance Determination

Permittee Name: CITY OF STOUGHTON		Permit Number: 0020338-09-0
	Compliance?	Comments
Discharge Limits	Yes	No effluent violations during current permit term.
Sampling/testing requirements	Yes	The required sampling is being performed.
Groundwater standards	NA	No groundwater requirements in current WPDES permit.
Reporting requirements	Yes	Required reports are submitted on time. Some late submittals of Land Application forms but this is not a chronic issue.
Compliance schedules	Yes	Compliance schedules were included for phosphorus and mercury variance. The City is participating in the Yahara WINS adaptive mangement project and will need a compliance schedule for annual reports. Annual reports for the mercury variance will also need to be continued because the City intends to reapply.
Management plan	Yes	A Pollutant Minimization Plan (PMP) is required as part of the Mercury variance and is being followed. The City plans on reapplying for the Mercury variance.
Other:	Yes	Operator in Charge (OIC) is at proper certification. Required: Advanced - A1, B, C, D, L, P & SS
Enforcement Considerations	None	
In substantial compliance?	<p>Yes</p> <p>Comments: After review of all required compliance reports, discharge monitoring reports and a site inspection performed on 4/4/17, the City has been found to be in substantial compliance with all terms and conditions of their current WPDES permit.</p> <p>Signature: Amy Garbe Date: 04/10/2017</p> <p>Concurrence: _____ Date: _____</p>	